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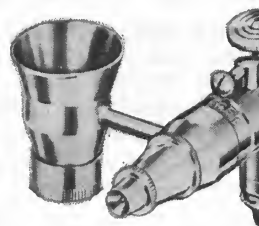
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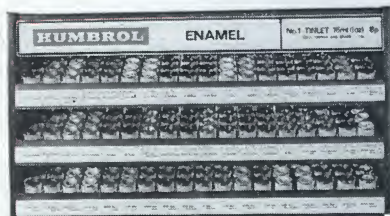
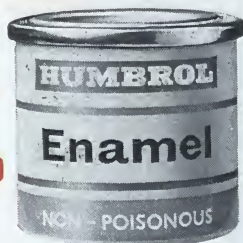
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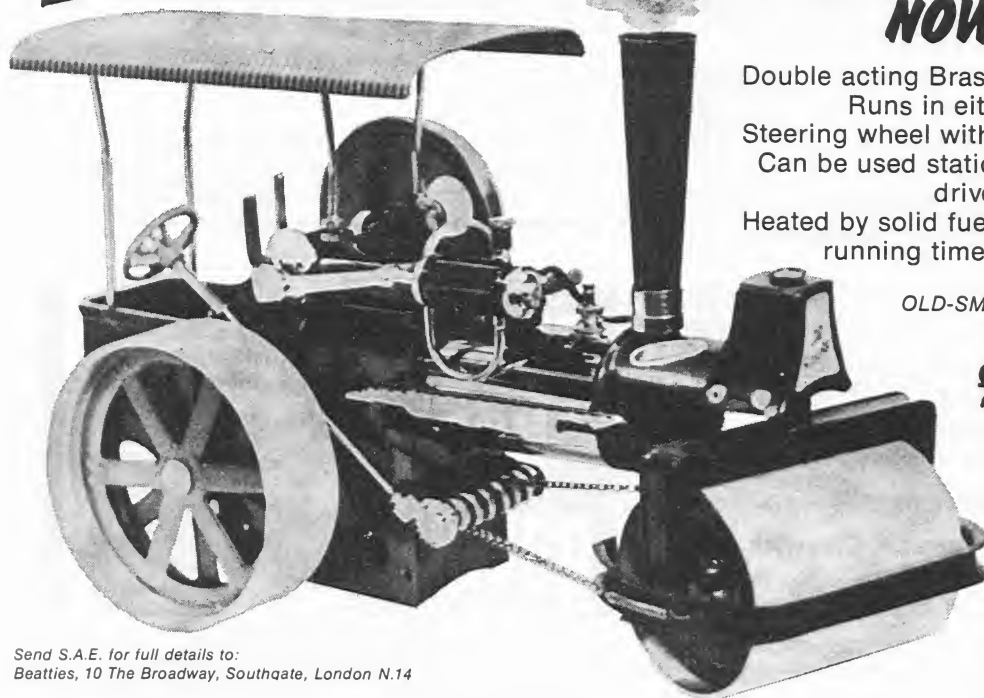
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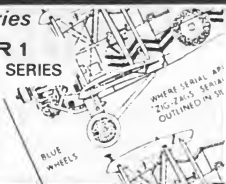
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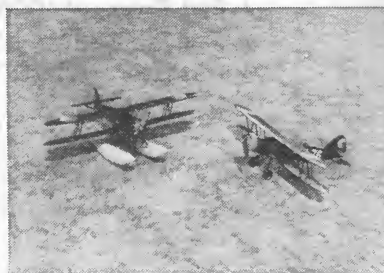
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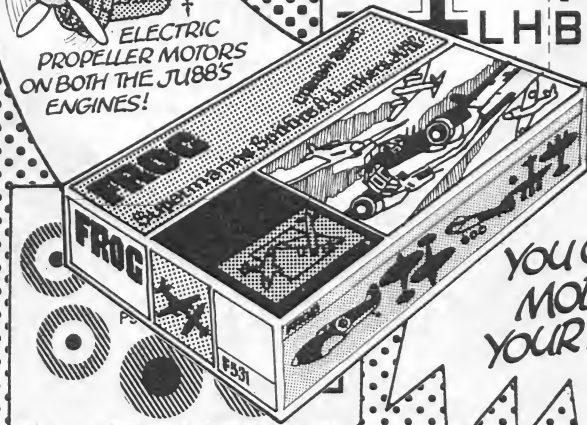
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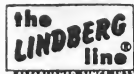
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AIRFIX magazine

September 1973
Volume 15 Number 1

FOR PLASTIC MODELLERS

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Bar Hill
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Tel Crafts Hill 80010

Editorial Director **Darryl Reach**
Editor **Bruce Quarrie**
Art Editor **Ian Heath**

Cover Picture

Men of the Royal Artillery during a practice 'shoot' with the British Army's new 105 mm Light Gun, which is available in model form in 1:32 scale from Airfix. The gun, which weighs 3,900 lbs, uses the Abbott Mk II ammunition system giving a range of 2,500-15,000 metres (9.38 miles) and a rate of fire of six rounds per minute (maximum) or two rpm (sustained). This flexible weapon has an elevation from 5.5° below horizontal to 70° above and, due to its low silhouette and fast all-round traverse, gives effective anti-tank performance using HESH ammunition. It can also be transported by aircraft or helicopter intact or as two separate loads, adding to its mobility and usefulness (Ministry of Defence photo).

Next month

Well, as observant readers will notice throughout this issue of *Airfix Magazine*, we move into new offices in Cambridge on September 1, and at the time of writing a state of some confusion exists! However, by the time our October issue goes on sale on September 28 the new Airfix BAC Canberra kit should be available, so we are devoting a large amount of space to the history and modelling of this famous aircraft. Other features should include the PzKpfw III recovery tank originally scheduled for this issue plus all the regulars.

Next publication date
September 28 1973



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September 1973

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Terry Gander and Neil Crosby

in the air



Profile — Grumman F-14 Tomcat

THE GRUMMAN F-14A Tomcat was one of the stars of this year's Paris Air Show and is very much an aircraft for the '70s. Designed as the

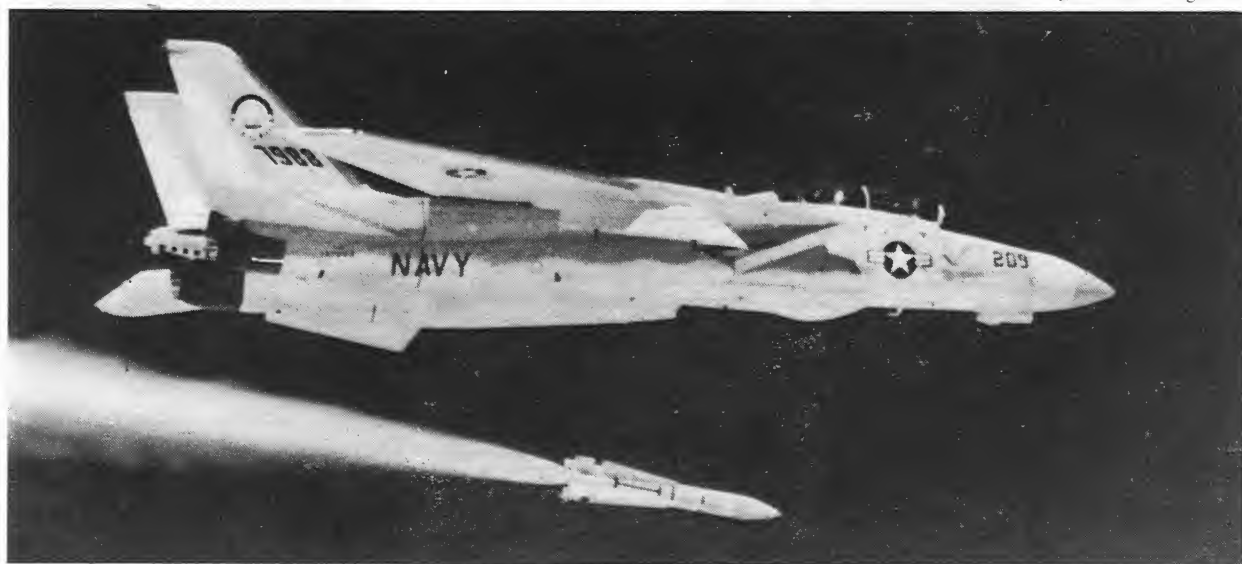
US Navy's carrier-borne answer to the threat of the MiG-25 (Foxbat), the Tomcat first flew on December 20 1970, and crashed rather spec-

tacularly on its first flight, but since then flight testing has been more successful. Production aircraft are now coming off the line (the Paris demonstrator was No 22) and test flying is still proceeding apace with the first US Navy test and handling unit equipped and working.

Heart of the Tomcat is its Hughes AWG-9 weapon control system, a fantastic feat of modern technology that can track, present and identify up to twenty separate targets for the visual control of the 'man in the back seat'. This information can be fed into the aircraft's main attack component, its six 150-plus mile range Phoenix missiles, and thus up to six targets can be attacked at any one time. In fact, four missiles have been fired simultaneously at four different targets (QT-33 and BQM-34 drones) and all four scored hits. A test firing of all six Phoenix missiles at six targets is pending at time of writing but should prove an expensive 'shoot' with each missile costing around \$147,000! The AWG-9 Phoenix system can also cope with the problem of the surface-hugging anti-ship missile.

To back up the Phoenix two AIM-9 Sidewinders can be carried and a M-61A1 20 mm rotary cannon is built-in for use only when the missiles have been expended. Should this happen, the Tomcat has proved its capabilities in mock dog-fights with an F-4J Phantom where it won 'hands-down'. The manoeuvrability is due to its excellent variable sweep wing which is computer controlled to suit speed and altitude but can be manually controlled as required. An odd feature of the Tomcat is that it cannot be stalled. In January 1973 the second prototype was deliberately flown with the wing at an incredible angle of attack of 77° but it did not stall or spin.

The Tomcat is powered by two 20,600 lb Pratt and Whitney TF-30-P-412 turbo-fans and can reach Mach 2.34. Later marks will have more powerful engines and even more advanced 'avionics', but at the time of writing the Tomcat's future has a large financial cloud hanging over it. Costs of advanced technology have meant that already Grumman are losing money heavily on the fixed-price contract for the first batch and Congress is insisting on an





F-14/F-15 Eagle fly-off for a possible 'standard' fighter for both the Navy and the Air Force. Whatever the outcome of this contest may be, the Tomcat will still be a worthy addition to the Grumman 'cats'

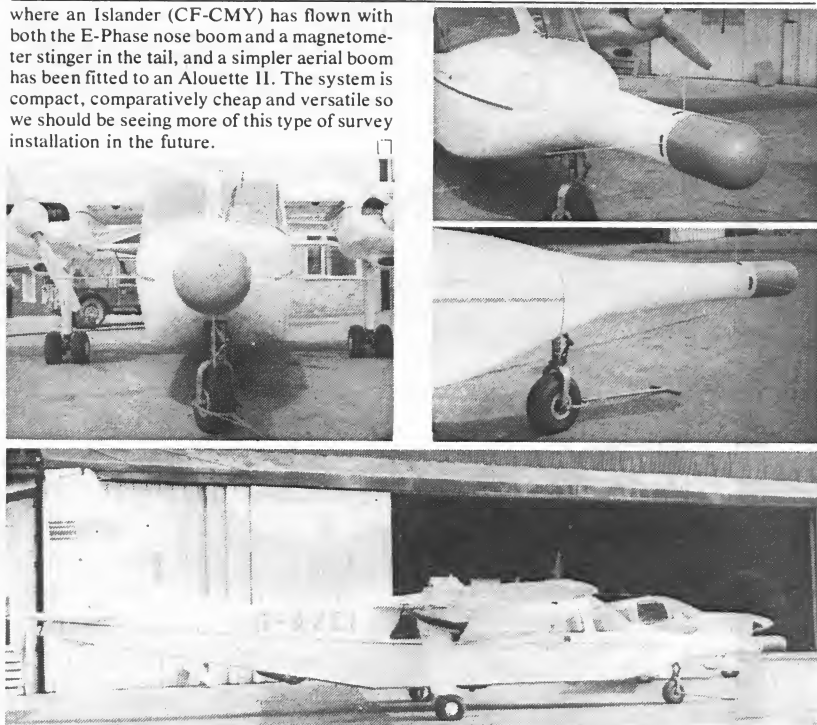
Geological Islander

RECENT AVIATION VISITORS to Fair Oaks airfield in Surrey will have been intrigued by the appearance of BN-2 Islander G-AZEI which has recently taken up residence there. This aircraft sports a lengthened nose which gives the Islander a definitely odd look but which has a very utilitarian purpose. The nose extension houses geological survey equipment for a rather specialised task, namely the prospecting for gravel beds under the ground level in East Anglia. Gravel is not the aircraft's only 'target', as it can also be used to detect clay, groundwater, permafrost, sand and other surface geology phenomena up to a depth of 150 feet and these can all be detected even in built-up areas such as towns.

The installation in G-AZEI is one developed by Barringer Research of Ontario, Canada, and is known as 'E-Phase'. As the aircraft flies at low altitude over an area it picks up radio waves from military VLF radio stations. These radio waves, as well as being transmitted through the atmosphere, also travel through the earth's surface and are affected by the type of surface through which they travel. Atmospheric and surface signals are both detected by the aeriels carried in the Islanders' nose boom, compared by the equipment and are recorded on to magnetic tape and chart paper. Thus geological 'maps' of an area can be built up and such features as gravel or clay beds can be detected.

The system has been much used in Canada

where an Islander (CF-CMY) has flown with both the E-Phase nose boom and a magnetometer stinger in the tail, and a simpler aerial boom has been fitted to an Alouette II. The system is compact, comparatively cheap and versatile so we should be seeing more of this type of survey installation in the future.



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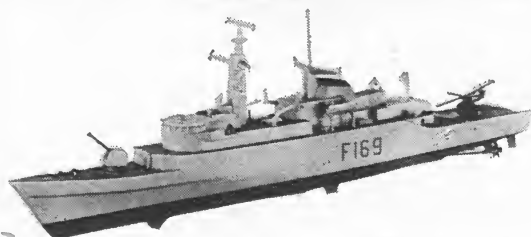
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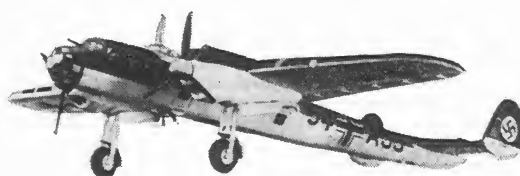
P51D Mustang



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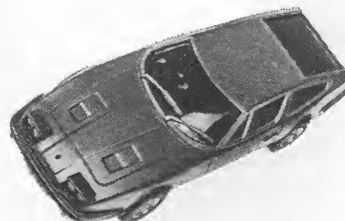
2nd Dragoon



SA330 Puma

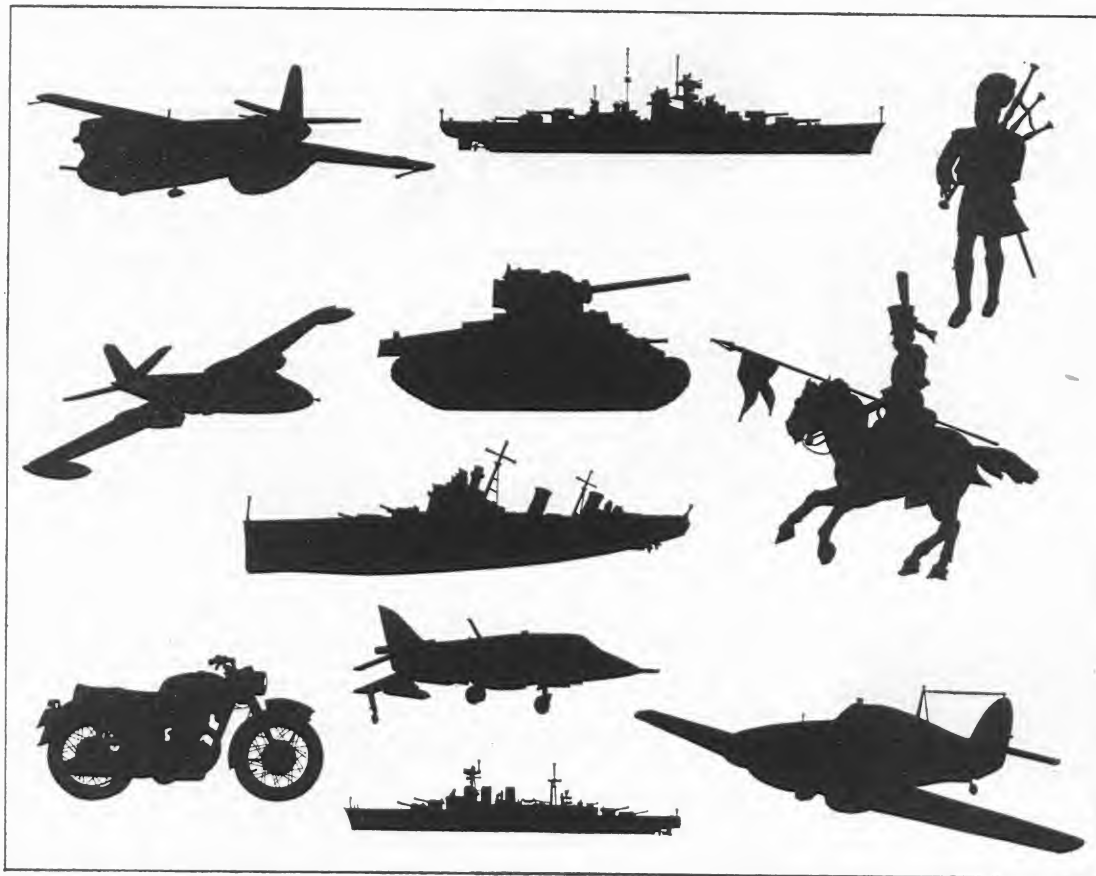


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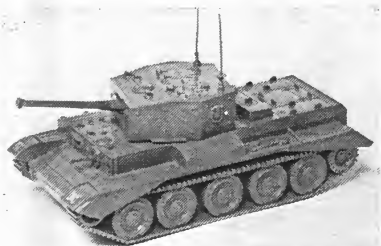
- 1 Cromwell Mk IV
- 2 SdKfz 251
- 3 AC-47 Gunship

1

LATEST ADDITION TO the Airfix range of 1:32 scale military vehicles which can be used to create battle situations with the Airfix 1:32 scale figures is the Cromwell Mk IV Tank. The Cromwell made its name in the Second World War since it was capable of a speed of over 40 mph and was the first British tank to have an all-welded construction.

The pre-assembled Airfix model in grey/green polystyrene is eight inches long and has a fully-rotating turret. The hull detail includes air cooler louvres, digging out equipment, driver's hatch and other ancillary equipment. The model runs on wheels under the main chassis and both the tracks and wheels have been reproduced in accurate detail. The Cromwell Mk IV's armament consisted of a 6 pounder gun and two Besa machine-guns which have been finely moulded on the model. A set of British Army transfers are also provided.

Although designed as a toy, with the running wheels removed this model could form the basis for an excellent military model of collectors' standard. Price is 64p.

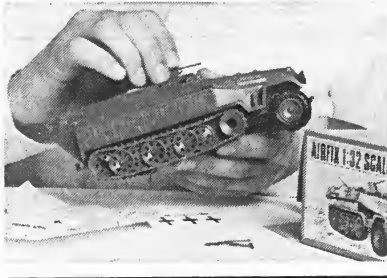


2

SECOND NEW RELEASE in 1:32 scale is a seven-inch-long pre-moulded model of the German SdKfz 251 'Hanomag' personnel carrier. The robust troop carrier accommodated twelve comprising commander, driver and ten panzergrenadiers. It was primarily used in conjunction with tank units and saw extensive service on all fronts. Its battle weight was just over eight tons and many variants were produced to include anti-tank, engineer, flame thrower, observation and command vehicles.

The Airfix model runs on two front road wheels and two under-chassis wheels at the rear. Tracks, hatches, digging out equipment, seats, observation ports and lights have all been accurately reproduced and a complete set of

authentic transfers together with two detachable machine-guns are provided in the kit. Once again, although designed as a toy, there is plenty of scope for super-detailing and diorama work. Price of the model is 57p.

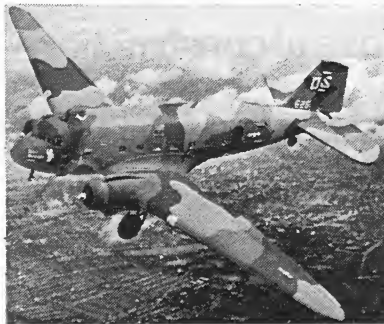


3

AIRFIX HAVE INTRODUCED a 1:72 scale model of the AC-47 Gunship in response to modeller's demands for a completely up-dated model of the old Dakota. The aircraft, which measures 10½ inches long when completed, includes four aircrew, rotating propellers and a retractable undercarriage. The 76 part kit has been moulded in grey polystyrene and clearly shows all the airframe details.

Markings included in this kit depict an aircraft of the 432 TRW based at Udorn Royal Thai Air Force Base in 1970. Because of the aircraft's low speed and vulnerability it was used almost exclusively at night and provision was made for the carriage of sixty flares with which the targets were illuminated. The guns could be sequenced or fired in unison and normally a crew of eight was carried. Armament consisted of a battery of General Electric 7.62 mm Mini guns located on the port side with a 12° depression. The aircraft is powered by two 1,200 hp Pratt and Whitney R-1830/90C engines.

Stocks of the old Dakota kit will remain in the shops for some time but will gradually be replaced by this new version, price of which is 54p.



first principles

Bruce Quarrie

DESPITE THE LARGE number and wide variety of specialist water-slide transfer (decal) sheets available to modellers today from firms such as Modeldecal, Raredec and Almark, there inevitably comes the occasion when *no* markings are available for the particular model you wish to make, and I receive a large number of queries from people asking how to get round this problem.

One solution, of course, is to hand-paint the markings directly on to the model, but this is rarely satisfactory because it requires extensive masking and a very steady hand.

If the problem is a simple one of squadron coding or serial numbers, for example, it can usually be resolved by a look through the Letraset catalogue. In case you haven't come across this, Letraset is a form of dry print lettering which comes on sheets of up to several hundred characters for 75p a sheet (plus VAT of course). You simply align the letter you want on your model and rub the backing paper firmly with the blunt end of a pen, and the letter is transferred to your model. Several hundred different typefaces are now available to match practically any lettering style seen on an aircraft, and many are also available in different colours.

A new innovation from Letraset is a form of stencil called Colorset which enables you to paint codes etc on in whatever precise tone is required, with perfect edges and none of the breaks seen on normal stencils. Full details of these and all Letraset products are available from most good stationery shops.

Other things — such as national markings or squadron insignia, crews' personal emblems and so on — are more of a problem, but can be resolved by making your own transfers. This method, along with many other hints on transfers and markings, is well described in Chris Ellis' famous book *How To Go Plastic Modelling* (Patrick Stephens, £2.40).

First of all, buy a packet of gummed address labels from Woolworths. Then either trace or lightly draw in the required design on the *sticky* side of a label. When you are satisfied with the outline, carefully paint in the design using Humbrol, Testors or Airfix enamel paint (*not* water or poster colours). When the paint is dry, cover the area of the design with half a dozen or more coats of varnish (matt or gloss depending on the effect you are after), allowing plenty of drying time between each coat. Finally, trim round the edges of your design with a pair of scissors in the same way as you would an ordinary transfer, soak in warm water, and your painted design, held together by the varnish film, will float away in exactly the same manner as a normal decal. Home-made transfers are more fragile than commercial ones, however, so great care is needed in handling them or they will break up. Nevertheless, if you have your heart set on a particular model, and can't get transfers in the shops, this method is well worth trying. □

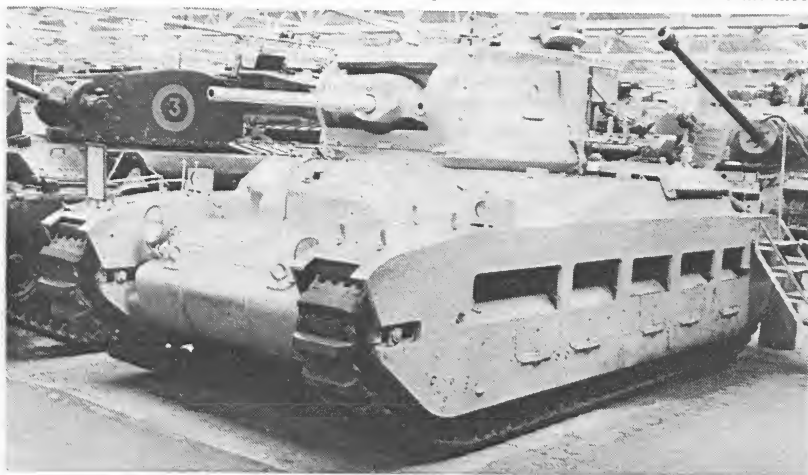
Matilda in close-up

Modelling details seen on preserved vehicles described by **Terry Gander**

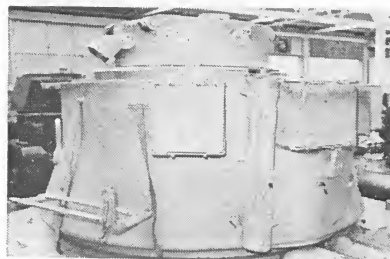
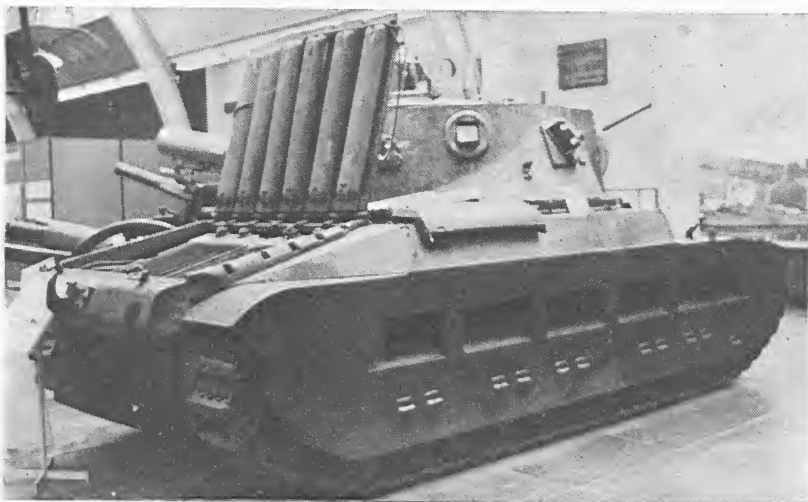
THE LONG HERALDED Airfix Matilda has at last arrived in the shops even though it has been preceded by the Fujimi 1:76 Matilda and at the time of writing the Tamiya 1:35 kit is nearly with us. All these kits make up into what was one of the most important British tanks of the early war years and modellers and wargamers will delight in making and using it. However, for many, modelling also means the vital research needed to produce an unusual, well detailed, or individualist replica of the original, and this short article gives some pointers to those who wish to delve into the Matilda story

and some pointers for those who want detail.

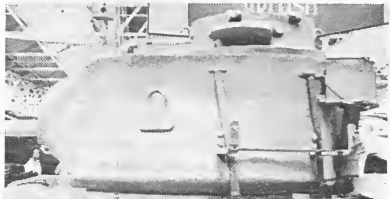
Anyone starting out on modelling research can do no better than looking at the real thing. Fortunately the Matilda has been preserved in relatively large numbers. In the UK, the Tank Museum has a Matilda Mk II (shown on these pages) and a Matilda with a CDL turret. The Imperial War Museum in London has a Mk V (again shown on these pages). In Canada there is a Matilda to be seen at Camp Borden, Ontario, while at the Aberdeen Proving Grounds in Maryland, USA, another vehicle is preserved. Australia seems to have the most



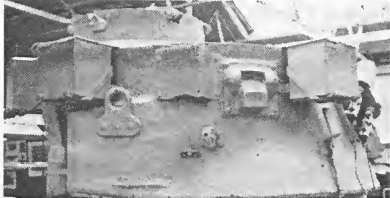
Above the Bovington Matilda which appears to have been repainted in a light sand finish. Most of the original fittings appear to be still on the vehicle, but the auxiliary tank is missing, and anyway was not always carried. The yellow number 21 is a museum addition. Below the Imperial War Museum Matilda with radiator cover raised. Hull rear is devoid of fittings apart from a large towing hook.



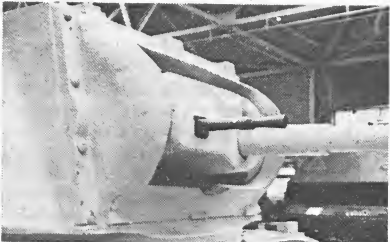
The turret left-rear of the Bovington vehicle. Purpose of the hollow tube container is unknown. The rack was a fairly standard fitting, designed for camouflage net stowage, and could be added to the kit after assembly from microstrip.



The turret left side. The barely visible turret emblem is a figure four in a triangle, both blue.



The turret right-rear. Obvious additions to the kit are the odd stowage boxes around the top, although these were not always carried.



Gun-mounting close-up. Anyone wanting a quick and simple change to their model can produce a Matilda CS by fitting a thicker, straighter gun barrel to represent the vehicle's 3-inch howitzer, used for close-support and smoke laying.



The 4-inch smoke generator projectors and their mounting plate.



Top the heavily armoured front glacis plate that could defeat all German anti-tank guns until the battle advent of the famous '88. Note the maker's plate and the headlight brackets. The tank serial number is T10459. **Above** exhaust and tank bracket close-up. If you don't want to fit the auxiliary tank, note that ring brackets are fitted behind it.

Matildas preserved for at Puckapunyal, Victoria, there are no fewer than four. Only one of these is a 'normal' tank as the rest are a bulldozer, Frog (flamethrower) and a Hedgehog rocket projector.

Failing the real thing being available the next best thing is reference sources. Top of the list comes Profiles. Sadly, the only Profile devoted solely to the Matilda is the old Armour in Profile Number 15, now out of print but still to be found on model shop bookshelves. AFV Profile No 58 is partly devoted to the Australian Matilda variants and well worth getting for conversion ideas. An odd information source on the Matilda is AFV Profile Special No 55 on German Self-Propelled Weapons. This contains an excellent shot of a Matilda captured by the Germans and converted to take a 4.7 cm Pak 181 or 183 (f) — an obvious conversion possibility and the Profile is well worth the 50p even without this Matilda shot. The same shot appears in an Ian Allan book on the Matilda along with a host of other photographs, drawings, maps etc, which cover all aspects of the Matilda and its service career — cost is £2.50. Other good sources can be found in B. T. White's *British Tanks and Fighting Vehicles 1914-1945* and a good drawing of a Mk IV can be found in the Bellona Series 3. The Chamberlain & Ellis massive *Tanks of the World 1915-45* and *British and American AFV's of WW2* also contain useful material on the Matilda but don't forget that many excellent sources can be found in old wartime publications both official and otherwise. Also much can be gleaned from the specialised enthusiasts' magazines such as *Tankette*, *AFV News* and the like.

The above listing is obviously by no means exhaustive but covers the sources accessible to most people. For the detail fans the accompanying photographs should prove useful. □

Terry Gander

military modelling



Matilda workshop crane in 1:76 scale

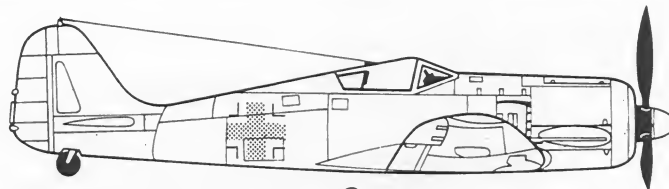
TANKS AND SIMILAR AFVs often get called upon to perform tasks vastly different from those they were originally intended for. Examples that can be cited are the M4s modified as 'sampling' vehicles for the first atomic bomb test at Alamogordo, New Mexico, in July 1944, and closer to home the much altered Crusader Dozer used to clear unexploded bombs after a fire at the ROF Kirby. More down to earth was a hitherto unrecorded use of a Matilda as what appears to be a mobile workshop crane. Exactly why this conversion of a gun-carrying tank was made is not known for all that has been unearthed about this vehicle can be seen in the form of the two photographs shown with this article. The photographs came from the collec-

tion of Mr Peter Chamberlain, to whom I offer my thanks for the chance to make a really unusual and unique model.

Scrutiny of the photographs gives little clue as to the use of the crane but the general atmosphere shouts out 'workshops!' so it may just have been a local mod for some particular job. Another possibility is that it may have been a test rig for a possible Matilda ARV, or as just an experiment to try out the crane. This latter seems rather likely since a similar 'A-frame' arrangement was used on the later Crusader, Centaur, Cavalier and Cromwell ARVs. Whatever the truth is, we can be sure that the

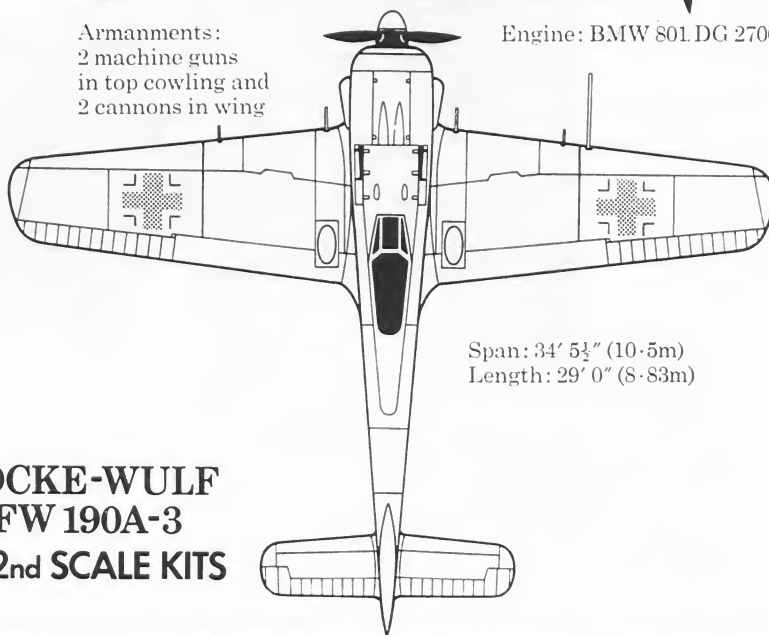
Continued on page 20





Armaments:
2 machine guns
in top cowlings and
2 cannons in wing

Engine: BMW 801 DG 2700 hp



Span: 34' 5½" (10.5m)
Length: 29' 0" (8.83m)

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FW 190A-3
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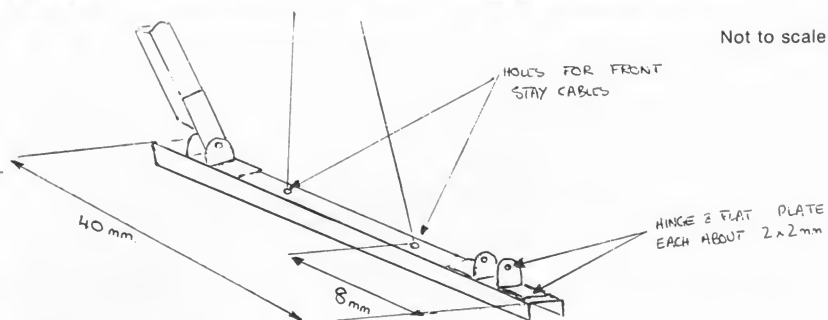
facts are somewhere in a dusty archive or unit record, so if anyone has anything on this vehicle please let us know.

A model of this unusual variant would be a good one for use in a workshop diorama or simply as an exercise to try out detail techniques. My model used the new Matilda chassis, Plastruct, Microstrip and scrap bits. It turned out to be a bit fiddly in places but the experience and expertise gained will make similar future projects that much easier to tackle.

Start off by assembling the Matilda straight from the box as normal. The only parts that need modification are parts 41 and 42 which are the front track fenders. File off track detail from these until the top is flat and then fit as normal. It seems unlikely that the auxiliary fuel tank would be needed so leave it off along with the headlights (parts 65 and 66). From there I found it easier to construct the 'A-frame' separate from the chassis and fix it in place only at the finish.

The main triangular frame was made from the smallest size of Plastruct girder, but of course, it could have been knocked up from scrap or sprue. The two long arms were cut the same length as the tank and the open sides of the channelling filled with Microstrip or scrap. For the base member a length of the same girder was cut 3 mm wider than the tank and the I section filed down one side to produce a shallow 'U'. On to this went the hinges made out of small pieces of Microstrip again — refer to the drawing for layout and spacing. When the hinges were fixed and secured in place a small hole was drilled in a Microstrip extension on the base of the side arms. A single length of thin wire or Microrod was then passed through but was not glued in place as yet.

The jib was cut as per the drawing. Again Microstrip was used as the base strengthener and the hinge pivot hole was reinforced with two Churchill wheels filed down flat to about 1

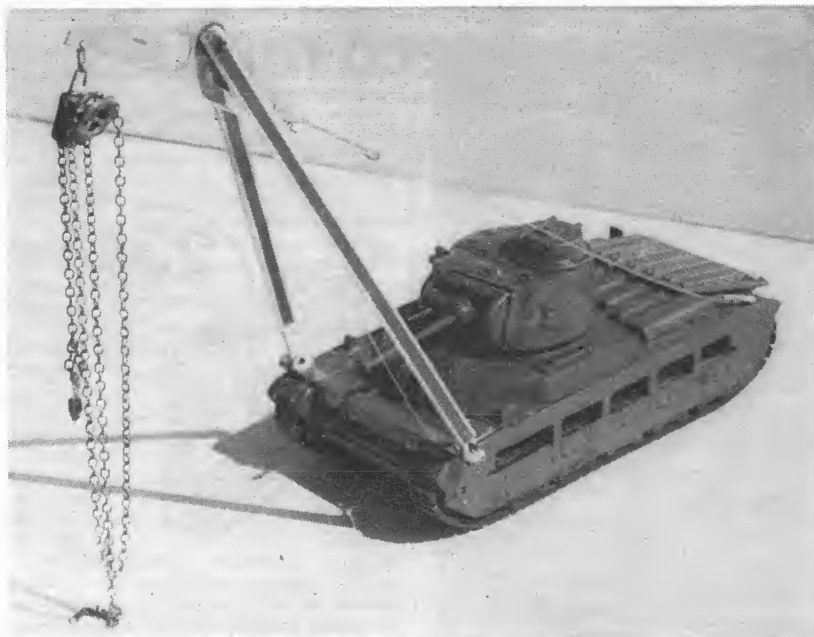


mm thick and drilled through the centre. (For drilling all these holes and especially the small ones dental drills and bits are invaluable. Mine

were scrap items about to be thrown away by my dentist, but when used in a small pin vice their modelling uses are many.) The sheave block started life as a Universal Carrier front step with two spare wheels from the same kit as pulley wheels and a Churchill road wheel again as the other pulley wheel glued on the side of the 'block'. These were the bits I had handy — you could of course use many other alternatives. The chain was intended to be Armtec 1:76 chain but I couldn't obtain any locally and used brass chain originally intended for model ships. This was cut into two lengths each about 3 - 4 inches. One was rejoined to form a loop round the larger pulley. The other had a hook and block knocked up from scrap and was draped round the smaller wheel. A 5 amp fuse wire link hooked the block and chains on to the front of the jib. At the other end of the jib drill a hole to take a 20 mm length of 5 amp fuse wire for the stay cable. When all this is done drill holes at the tops of the side arms for the pivot, made from Microrod or wire. Glue all the joints together on the outsides so that the arms and jib are free to move.

Next come the stay cables. These were made from 6 lb nylon fishing line — a modelling mater-

Top of page (and previous page) the prototype Matilda workshop crane, date and location unknown. Left the author's model completed before painting.



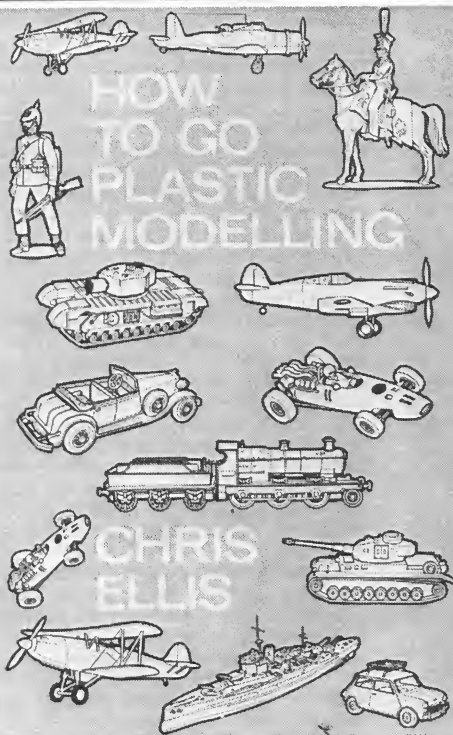
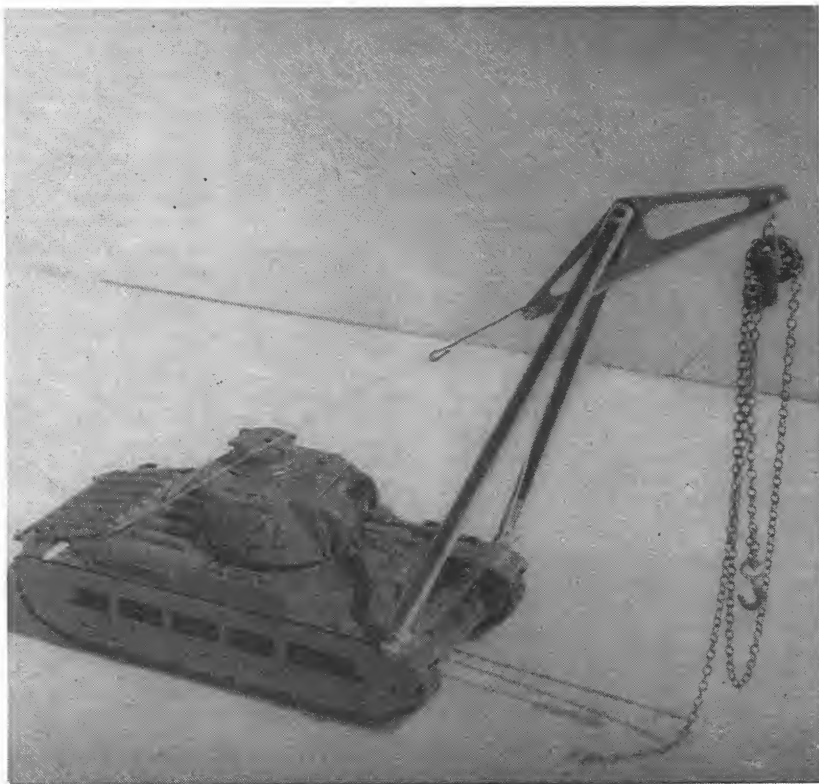
Right another view of the author's model completed but shown before painting to illustrate construction. Displayed as part of a diorama, perhaps lifting the engine from a disabled vehicle, this would make a fascinating and unusual model. **Below** same-size template for the jib.



1:76 scale

ial with a host of uses. The front stays were one length, nipped in the middle with pliers to form the apex of the cable at the jib. Pass the cable through the same hole as the wire stay and cement the ends to the base member after drilling two holes. Use Evo-stick or something similar for this, but leave the ends free and trim them after the glue has set. The two stays to the rear go through the end of the wire stay and are cemented under small bits of scrap to the hull sides about 3 mm from the rear. The 'A-frame' can then be cemented into place. Use the photos as a reference for the fixing point.

All is then finished except for the painting. Mine was painted olive green and the side marking T.7282 (in white) has yet to be added to my model. The result is more than just a model, for the end result gives me the confidence to try other more complex projects using the techniques learned in producing a most unusual little replica of a vehicle nearly lost to history. □



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Airbrush afterthoughts

Hints on correct airbrush use and a review of the new Badger 100XF by **Bryan Philpott**

IT IS NOW almost two years since the airbrush became more than just a mysterious word that repeatedly appeared in American modelling magazines. During this time many British modellers have become aware of the ultra-perfect finish that can be obtained by the correct use of this piece of equipment, with the result that more and more of them are turning to it as a means of adding lustre to their hobby.

In the May 1972 edition of *Airfix Magazine* an article was printed outlining the airbrush and how to use it, since then there have been further developments in this field and also, many who invested in the more expensive models have encountered problems which have caused them heartache. The purpose of this article is not only to review one of the latest releases by the American Badger Company, but also to take a look at some of the problems with advice on how to overcome them.

Although airbrushes have been available in England for as long as anywhere else in the world, it was not until the Badger models started to be imported and distributed that a definite sales campaign was aimed at the modelling fraternity.

The two most popular and well-known models currently readily available are those manufactured by Aerograph DeVilbiss and Badger — imported by Morris and Ingram (London) Ltd, and available from most of the regular advertisers in this magazine.

Both manufacturers' products perform basically the same function and produce similar end results, but there is a marked difference in the design parameters used. There are no doubt

good and bad points — as there are with almost everything — about either brush, but it would take far too much room and prove nothing very conclusive to go into the intricacies of each within this article. The main basic difference is that the Aerograph DeVilbiss models have the paint reservoir on the top and are gravity fed, whilst the Badgers use a venturi to suck the paint from its carrier into the nozzle. The Badger model 250 can really be discounted from a serious attempt to analyse airbrushes for it is nothing more than a primitive (when compared with the others) spray gun.

But it is perhaps wrong to dismiss this model so lightly for although it has its shortcomings, it does enable good one-colour finishes to be achieved and also allows the younger or less wealthy modeller to 'cut his teeth' before advancing on to a more sophisticated product.

One fact that must not be overlooked on any account is that the airbrush is a *precision* instrument and as such is costly to produce, and must be well looked after if it is to maintain peak performance. The engineering of the DeVilbiss models is absolutely first class and their quality can be felt as soon as one is taken from its box. Of course such quality must be paid for, hence at this time, this manufacturer's products are more expensive than their Badger counterparts, but once one is purchased it should, if taken care of, give many years of excellent service.

The major difference between the Aerograph DeVilbiss and the Badger 200 series, is that in the former both the air and paint flow are controlled by a single push style lever on the top. Push the lever down to allow air to flow, and

slowly ease it back to regulate the needle that controls the amount of paint being sprayed. The Badger 200 has two controls, a button on the top to release the air and a threaded nut on the end to adjust the needle, this means that with this model one really must set the width of spray before commencing work. With practice the needle can be adjusted whilst spraying is being done but this should be carried out with care.

However, Badger have now introduced the model 100XF which uses a similar principle to that of the Aerograph DeVilbiss, and it is this model that was recently tested over a period of time.

Apart from the main mechanical difference relating to paint and air control, the 100XF is immediately identifiable from the 200 by the method of carrying the paint. Whereas the model 200 uses a jar underneath the body, which at times can prove a little inconvenient when trying to reach awkward places, the 100XF has a paint cup attached to the side. This cup is detachable and obtainable in 1/16 and 1/8 oz capacities — it simply pushes into a hole on the side of the brush and can be removed for replenishment and cleaning. It is in the latter that the cup really comes into its own, for the bottom unscrews and allows every drop of paint to be cleaned out with no difficulty whatsoever.

In operation the 100XF was found to be easily adjustable from a very fine line to a wide spray with finger-tip control that equalled other more expensive models. The spray regulator — or tip that fits on the nozzle end — pushes into its carrier and therefore minimises threads becoming clogged through bad cleaning. The paint cup in the smaller size was found to be a little inadequate for most models, needing constant filling on anything larger than say a 1:72 scale Spitfire, but since refilling is so easy this was not a major disadvantage, and with the larger 1/8 oz cup available this is a minor criticism. One of the recently introduced Mogramair cans of propellant was tried as well as an electrically operated compressor. The can worked well but must be constantly watched for fall in pressure during continuous spray runs, and one disadvantage is that there is really no foolproof way in telling when the pressure is about to fail due to exhaustion of the can. Since cleaning of the airbrush is of major importance the can must be used to spray thinners through the brush and this is of course non-productive as far as finishing is concerned. There is no doubt that a proper compressor is ideal but since these can be expensive many will cope quite happily with the cans of propellant. But basic economics should be considered, and if a lot of modelling is carried out there is no doubt that saving the £30 odd for an electric compressor is sound sense: after all, this sum amounts to approximately 35 cans of propellant and if each can sprays an average of four reasonably sized models, it does not take a mathematical genius to work out that a compressor that will last almost forever is a wise investment.

Another form of motive power that can be used with any of the Badger models, and for which an adaptor is available, is a spare tyre from the family car. The adaptor fits on to the tyre valve and gives an inexpensive supply of compressed air. The tyre must be fitted to a wheel, so there are of course problems unless one has a room or shed exclusively devoted to modelling activities. Whilst most wives, mothers, girl friends, etc. are usually prepared

The new Badger 100XF airbrush showing the detachable side cup.



to tolerate most things connected with modelling the introduction of the spare wheel into the house is likely to lead to some domestic upheaval!

In addition to the methods outlined above it is also possible to obtain a foot-operated compressor which consists basically of a reservoir which is charged by a footpump.

The Badger models 100XF, 200 and 250, all worked very well with all the motive forms mentioned but it was not possible to try the Aerograph DeVilbiss models on the spare tyre since a suitable adaptor was not available. The end result was the same with all the airbrushes tried with the more expensive versions of the Badger (the 100XF) and the DeVilbiss Super 63 coming out on top with nothing to choose between either of them. From a modelling point of view the final vote will probably go to the 100XF since it is easier to maintain, spares are readily available — a six-week wait for a new hose for the Aerograph 63 compared with a by-return service on the 100XF not giving a very impressive record to the former — and perhaps most important of all a saving in initial cost.

Whichever model is finally chosen it will only remain in tip-top condition if it is looked after and this is one of the secrets of getting good results.

After each colour is sprayed, always thoroughly clean the airbrush by spraying thinners through it and at the end of a painting session repeat this more thoroughly than ever and end by spraying Polyclens to remove the last vestige of paint followed by a further application of thinners to remove the Polyclens. Never take the airbrush to pieces unless you are absolutely sure of what you are doing. Remember that it is a precision piece of equipment and great skill has gone into making it. If the needle is removed do this very carefully making sure that the tip is not damaged in any way, and never, never, try cleaning the nozzle by poking any form of wire through it. Experience has shown that cotton wool ear buds, pipe cleaners and tissues are the best cleaning mediums but even the latter should be used carefully for the slightest piece of tissue entering the brush will cause problems.

Turning now to some of the problems that have been encountered by newcomers to airbrushing, it is as well to make a start at the most common which seems to be failure of the equipment to spray. Assuming that the compressor or propellant is working properly and the airbrush has been well looked after, this trouble can usually be traced to the paint.

It is essential that whatever medium is being used is mixed properly and stirred well before being placed into the reservoir on the airbrush. No hard and fast rules can be laid down on the correct percentages of paint to thinners since all paint varies in its content. If the Humbrol or Airfix range of enamels are being used a good starting point is 40 per cent thinners to 60 per cent paint, but this is by no means a hard and fast rule or guide. For example, I have found that a new tin of Humbrol silver will sometimes spray with no thinners added whereas another colour may need a 50/50 mix. The only real answer is to experiment until the correct mix is found for each colour being used: even this will then vary as the paint ages. But if the paint seems to be right and when the control button is depressed it does not spray, it could be that it is

Handout photo showing the Badger 200 in use with a Mogramair propellant canister on the Airfix kit of RMS Mauretania — hardly the ideal use for an airbrush! Compare the paint job on this model with the cup on the new model 100XF.



far too thick, unlikely as at least some should get through, or that it has not been stirred properly, most likely since it takes only the tiniest particle of pigment to clog the needle venturi. Some modellers go to the extent of straining the paint through a lady's stocking (or tights to the younger readers who may think a stocking is something that footballers wear) and this is a worthwhile precaution until more experience has been obtained.

Another fault is that sometimes the paint will spurt or spray evenly, this is caused by air bubbling into the colour cup which again can be as a result of the paint being too thick and causing a build up on the needle or around the nozzle outlet. It can also be caused by the rubber grommet on the DeVilbiss, or the wax seal on the Badger, not having been replaced after the brush has been stripped for cleaning.

A grainy texture to the paint or the brush causing 'spattering' can be caused by a number of things. One is the old favourite of too thick a paint, but the more common is insufficient air pressure or a bent needle. Insufficient air pressure is usually only associated with propellant cans getting low or being used for too long a period and losing their pressure. If this happens take a break or stand the can in warm water for a short period. If the needle is bent it is possible to very gently straighten it but this is difficult so it is advisable to have a spare on hand, and make a note to be more careful with this part in the future.

A colour fleck at the commencement of spraying is invariably the result of poor cleaning of the previous colour, sometimes this can be rectified by spraying on a piece of spare plastic or paper until the correct colour results, but it is usually better to start again, clean the brush very carefully and once more be more careful next time.

If the paint is too thin it will simply run as it hits the surface that is being sprayed and not cover either the undercoat or surface, just add more paint until colour adhesion is achieved.

One problem that is often brought up, is that certain colours mark very easily after spraying. This fault is confined to paints using certain pigments and in simple terms what is happening is that the mix is not quite right. It is thin enough to spray but dries too quickly, in some cases as soon as it touches the model, so although the colour looks right, if it is handled the fingers will lift the paint, which is by now more-or-less coloured powder, from the surface. Of course all airbrushed paint dries extremely quickly, but even so it should not be handled for at least 24 hours, except during other spraying operations — for example a two- or three-colour camouflage, when a tissue should be used.

It is not generally appreciated that the fingers absorb a great deal of moisture and can easily become very greasy and this can be transferred

to a model with disastrous results. This point of grease should also be considered before a model is sprayed, since any form of it will cause the paint not to take, so before spraying it is advisable to clean the model in a mild detergent (this should ideally be done on all models before painting anyway).

A final problem that is confined to users of electric or foot operated compressors is that of water in the air-line. When air is compressed the moisture in it is also compressed and forms small droplets which will easily filter into the air-line and brush causing blemishes on the model. This is particularly noticeable when high humidity is present, the only satisfactory cure being the use of a water-filter fitted to the compressor which extracts the offending moisture before it gets into the brush.

These few points on 'fault finding' are the most commonly quoted ones but there are others and the majority of them will all come back to the common point of cleanliness and maintenance, a properly looked after airbrush will give no headaches so meticulous attention to careful cleaning and following the manufacturer's instructions in all respects will pay dividends.

As a finale, a word about the situations in which spraying is carried out will not be amiss. Always make sure that the room is well ventilated and since a certain amount of paint is going to be absorbed into the atmosphere it is advisable to use a small mask to protect the mouth and nose, especially if prolonged periods are to be spent in this type of atmosphere. The airbrush atomizes paint to a very fine degree and this can become a severe irritant if precautions are not taken. To spray in a room with poor ventilation is likely to lead to headaches, runny eyes and even clogging of the fine hairs within the nostrils. Whilst the danger to health is by no means as likely as it is to those engaged on full-size spraying operations where masks etc are compulsory, it is best to be wise rather than suffer any chance of discomfort. A small spraying booth constructed of odd pieces of wood with one side open — even a cardboard box suitably adapted will do — is a useful asset and will give protection to any adjacent walls, especially during the early days of experimentation when paint can end up everywhere! This type of booth can be extended to include a turntable on which the model is placed thus preventing the need for holding or turning the model with messy fingers. But that is another story and perhaps one day, editor permitting, details of such a booth can be published.

There is no doubt that the airbrush is now an accepted piece of equipment and although this article has only briefly touched on some of the minor points, it is hoped that it will be useful to those who are having trouble or are about to invest in this sophisticated equipment. □

Second World War RNZAF Harvards

Based on the Airfix 1:72 scale kit from
New Zealand modeller **Garry Mansfield**

THE RNZAF HAS been operating the North American Harvard for more than 30 years, so it is not surprising that a wide range of colour schemes can be applied to Airfix's 1:72 model of this aircraft.

Our three-view drawing and photographs show NZ999 as it appeared at one of the RNZAF's flying training schools during the war.

The location of the yellow fuselage panel and wing bands suggest that the aircraft was delivered in yellow overall finish and the camouflage applied in New Zealand over the original paintwork.

It would certainly have been easier to mask off large panels than individual insignia and

identification numbers prior to camouflaging.

The fuselage roundel is unusual for its diminutive size. Photographs suggest that it was only 20 inches diameter which makes it very unusual indeed from the modeller's viewpoint, as there are very few sources of such roundels.

The scrap-box came to our aid, as a suitable roundel was found on the Revell 1:72 Kittyhawk decal sheet. The type A1 fuselage roundel, which incidentally is undersize for a Kittyhawk, is just about right for the Harvard once the yellow outer ring has been carefully trimmed off.

The type B upper wing roundels are 35 inch diameter and are from a suitable decal sheet. The type A underwing roundel is also 35 inches

diameter and from the same source. Standard size 24 inch x 25 inch fin flashes, trimmed at the leading edge contour, appear on the fin.

Serial numbers are from Letraset, and the codes '99' can be made from spare transfer sheet.

The only 1:72 scale Harvard available is from Airfix, and very few changes or modifications are necessary on this kit apart from replacing the wheel well doors with new ones from plastic card.

Note that NZ999 has an extra frame on the extreme rear canopy, it has the over-wing exhaust and the early type pitot (see drawing).

Camouflage colours of dark earth and dark green are from the Humbrol camouflage pack. The propeller hub is natural metal, as are the forward faces of the blades. The rear faces are matt black.

Another interesting scheme is that displayed by NZ914, illustrated in profile. The camouflage pattern is the mirror image on NZ999 (Compare port view of NZ914 with starboard view of NZ999) and the code letters are red with a thin black outline. In all other respects it is quite similar to NZ999.

The RNZAF took delivery of its first Harvard in March 1941 and the aircraft has been the mainstay of the Flying Training Wing ever since.

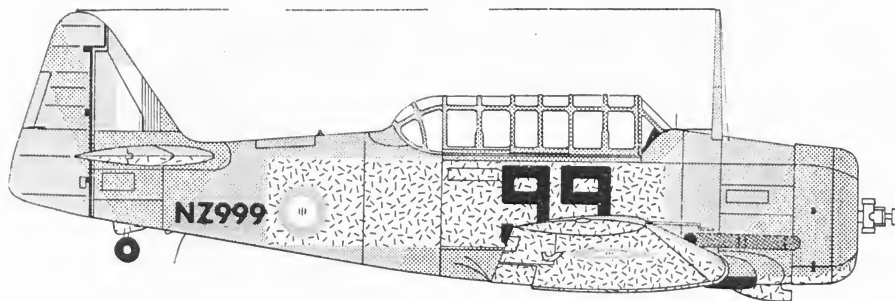
202 Harvards were received during the war and today 16 of them are still in service at Wigram, in addition to numerous instructional airframes dotted about the country.

The first 14 Harvards were brought on charge at Hobsonville and they and subsequent batches initially served with No 1 Service Flying Training School at Wigram and No 2 SFTS at Woodbourne.

More Harvards became available as the war progressed and they were allotted to many other units, including the Central Flying School, Operational Training Units, Fighter

Left the author's model of NZ999. This simple paint conversion provides an entirely different model for any collection of Second World War types. The yellow fuselage and wing bands on the dark earth/dark green camouflage is quite striking (Photo by Steven Young). Below the real thing photographed in New Zealand some time during the war.





20" DIAMETER TYPE "A" FUSELAGE ROUNDELS.



DARK GREEN



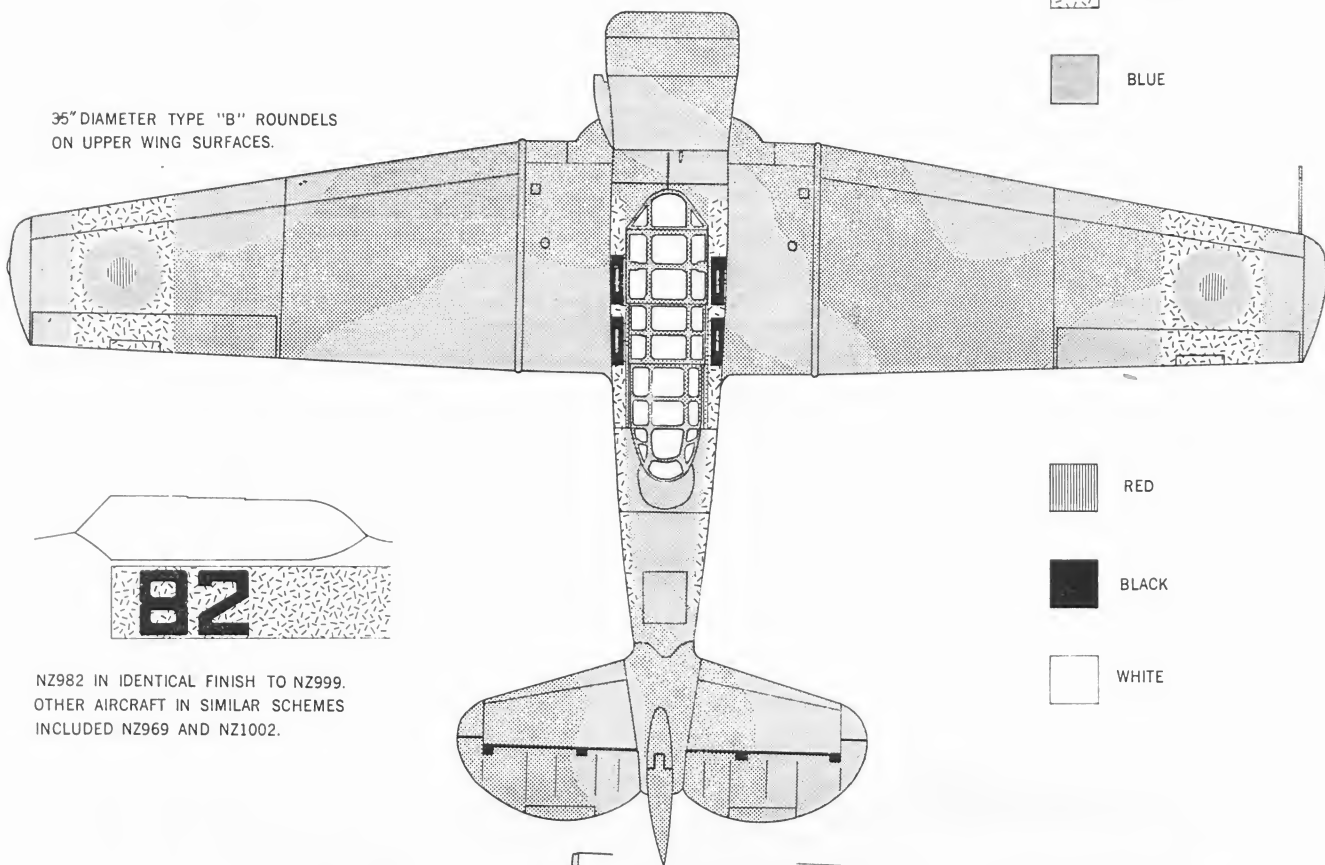
DARK EARTH



YELLOW



BLUE



36" DIAMETER TYPE "B" ROUNDELS
ON UPPER WING SURFACES.



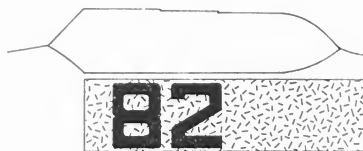
RED



BLACK

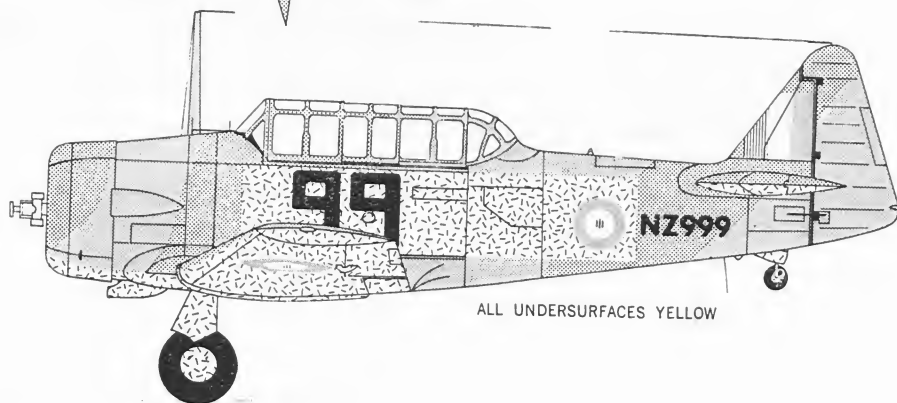


WHITE



NZ982 IN IDENTICAL FINISH TO NZ999.
OTHER AIRCRAFT IN SIMILAR SCHEMES
INCLUDED NZ969 AND NZ1002.

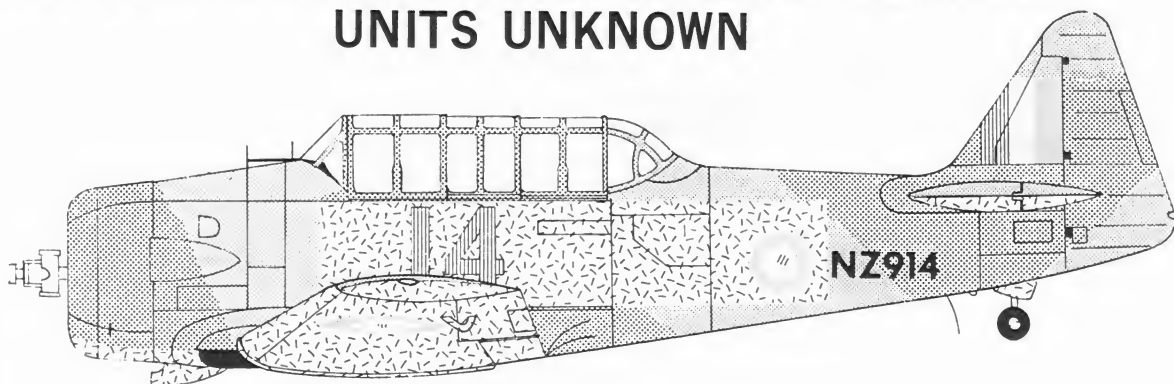
drawings by
G.D. MANSFIELD



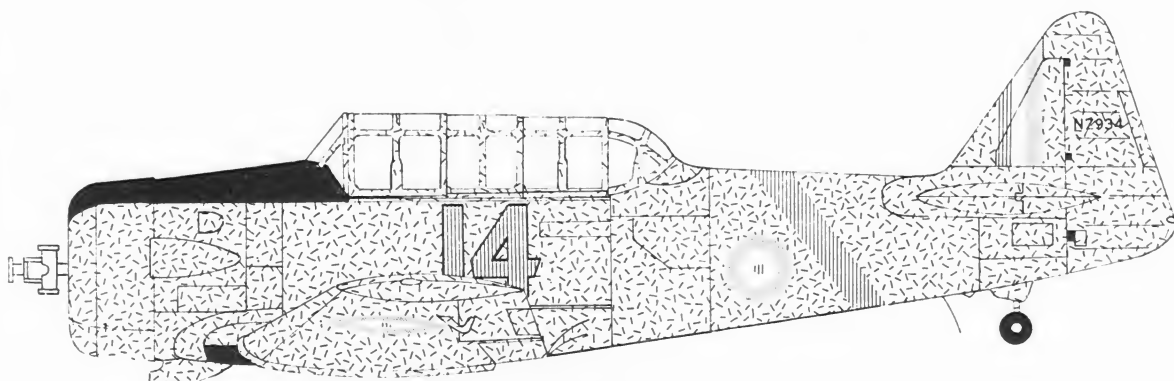
ALL UNDERSURFACES YELLOW

0 FEET 6
1:72 SCALE

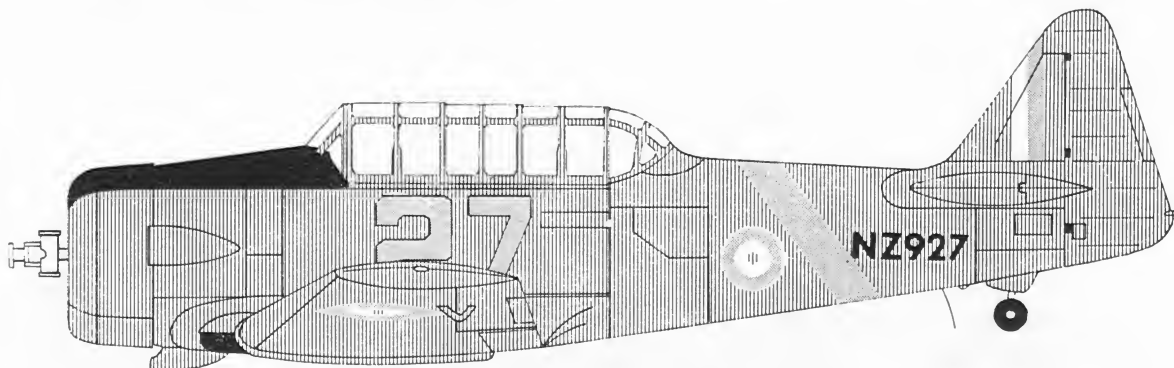
HARVARDS IN WAR-TIME R.N.Z.A.F. SERVICE. UNITS UNKNOWN



NZ914 IN MIRROR IMAGE CAMOUFLAGE TO NZ999 "14" IS RED.



NZ934, YELLOW OVERALL, BLACK ANTI-DAZZLE PANEL.. "14" IS RED WITH BLACK OUTLINE.
NOTE SERIAL NUMBER ON RUDDER ONLY.



NZ927, GLOSS RED OVERALL, BLACK ANTI-DAZZLE PANEL, "27" AND FUSELAGE BAND BLUE. NOTE STYLE OF FIN FLASH ON TWO BOTTEM AIRCRAFT AND ABSENCE OF AERIAL MASTS FROM ALL THREE. TYPE B UPPER WING ROUNDELS AS ON NZ999.



Above NZ927 as shown in the bottom drawing on the facing page.

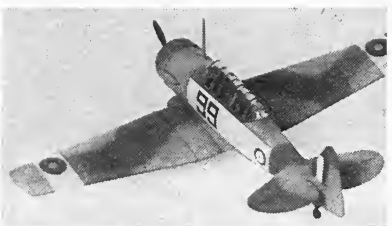
Gunnery School, Drogue and Utility Flight, Target Towing Squadrons, fighter squadrons and even No 25 Dive Bombing Squadron.

At the end of the war most of the Harvards were placed in long-term storage at various air bases, although many were brought out when flying training recommenced in 1949.

During 1959-60 the Mk II Harvards (NZ901-1005) were disposed of by the Air Force. They had not flown since the war and were in a dismantled state. Most of them went to Bennett Aviation in Te Kuiti where they were broken up.

In addition to the Harvards at Wigram, two specially-equipped aircraft are on the strength of No 14 Squadron at Ohakea for use in forward air control duties. □

Below three more views of the author's model (Photos by Steven Young). All material in this article is reprinted from the New Zealand aviation magazine Wings by kind permission of the editor.



Calling all overseas readers

Would all overseas readers please note that *Airfix Magazine* is always on the look-out for interesting conversion and paint scheme articles, especially on aircraft and AFVs. If you think you could write for us, send a sample article. This should be typed with double spacing and accompanied by any relevant drawings in black ink together with glossy photographs of the model and, if possible, the prototype(s). All contributions should be addressed to the Editor, *Airfix Magazine*, PSL Publications Ltd, Bar Hill, Cambridge CB3 8EL, England.



French and Belgian houses by Terence Wise

THIS ARTICLE IS really a continuation of last month's, and all points made in last month's opening paragraph apply here too.

French cottage and house

The buildings in this model are based on examples seen in a French village during the Allied advance on Paris in 1944 and consist of a typical cottage adjoining a taller, squarish house which has been extended by the addition of two lean-tos. Battle damage to these buildings was copied from the real buildings because the ruined lean-tos provide excellent cover for riflemen, the outer lean-to perhaps also a position for an anti-tank gun or machine-gun. As with all other two-storied buildings covered by this series, the roofs were made detachable, giving this particular model a potential variety of appearances, since all, one, two or none of the roofs may be fitted at any one time. These buildings could be used for other wars, certainly for 19th century ones and perhaps as far back as the middle of the 18th century.

Assembly. The buildings on which the model is based were covered with stucco, so a plain grey plastic card was used for all walls. Cut front and rear wall panels as shown by Figs 1 and 2 respectively. Cut end and partition walls from Figs 3, 4 and 5 as follows: Fig 3 outside cottage wall; Fig 4 (without a doorway) house wall next to cottage; Fig 4 (with a doorway) house wall next to lean-to; Fig 5 end wall of outer lean-to. Make any bullet and shell holes required then assemble the walls, end walls within side walls. Insert plank upper floors as follows: cottage 45 x 79 mm, house 45 x 38 mm, inner lean-to 45 x 30 mm. The floors are 40

buildings for wargames

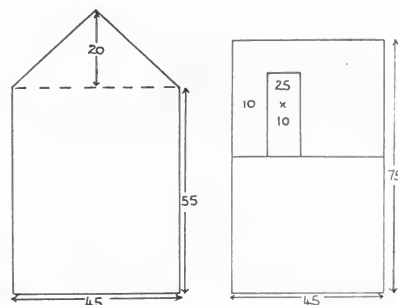
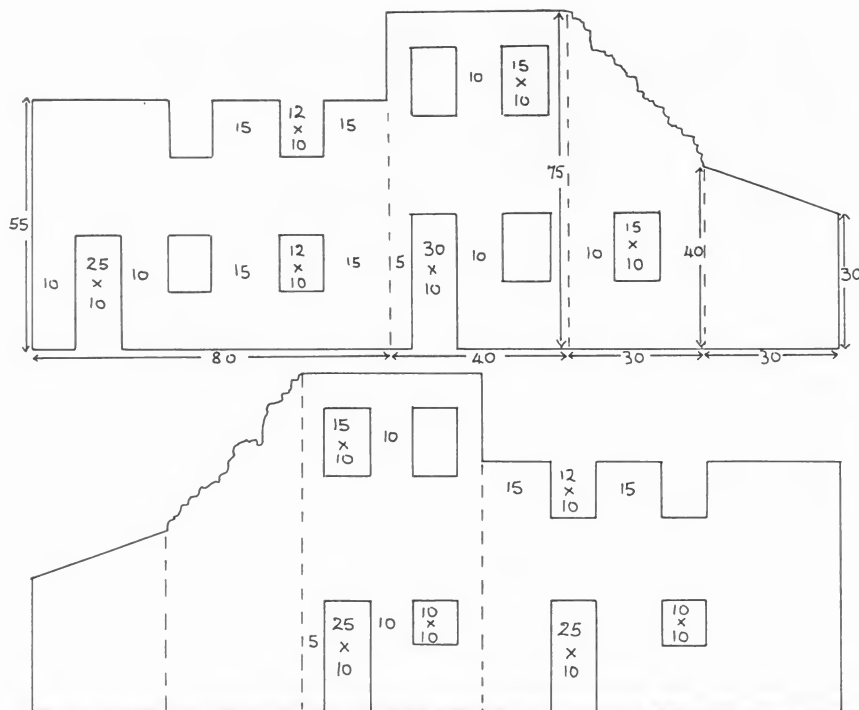
mm from the bottom edge of the house and lean-to, 28 mm up in the cottage. Remove odd lengths of plank from the lean-to floor, where it touches the outer lean-to, to give a shattered look. Add sills and glazing bars (some broken) to all windows, doors to all doorways, and a plain porch to the house front. Porch sides are 8 mm deep by 30 mm high; the flat top 8 mm deep by 11 mm wide.

Cottage roofs. Cut two pieces of tile card, each 82 x 32 mm. Remove irregularly shaped panels to simulate shell damage. Reinforce the ridge joint inside with a length of 1/8 inch square balsa, 76 mm long. Cap the ridge with a strip of cardboard, 6 mm wide, and add a chimney stack of 1/4 inch square balsa. This should start 25 mm from the house wall, ie the stack is aligned with the blank wall between the cottage windows. Add a chimney pot of ball pen ink tube. A ruined roof beneath this damaged roof is easily constructed from the scraps of tile card cut from the roof panels and some broken pieces of match for rafters. The only vital points to watch when building this second roof are that matches must be placed along the wall tops (on the inside) to represent wall plates and on the end walls to provide a resting place for the damaged roof. Make sure before the cement of the ruined roof sets that this 'inner' roof does not interfere with the fitting of the damaged roof.

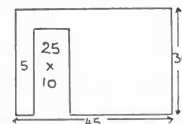
House roofs. The damaged roof is made from four triangular pieces of tile card: front and rear 43 mm base with 30 mm to the apex; sides 47 mm base with 28 mm to the apex. Add chimney stack to the rear part of the roof, made up as for the cottage. A ruined roof is also added,

The fully assembled French houses with minor damage to roofs, windows and walls.





Top left Fig 1 - French buildings front wall panel. Below left Fig 2 - French buildings rear wall panel. Above Figs 3 and 4 - outside cottage wall and house wall next to cottage. Below Fig 5 - end wall of outer lean-to. Foot of page Fig 6 - showing all necessary measurements for destroyed Belgian house. Below two photos showing the author's completed French buildings with British troops from the Airfix Combat Group in occupation. The one on the left is still relatively intact while that on the right has all three 'destroyed' roofs in position. Note shell 'hit' marks on outer walls.



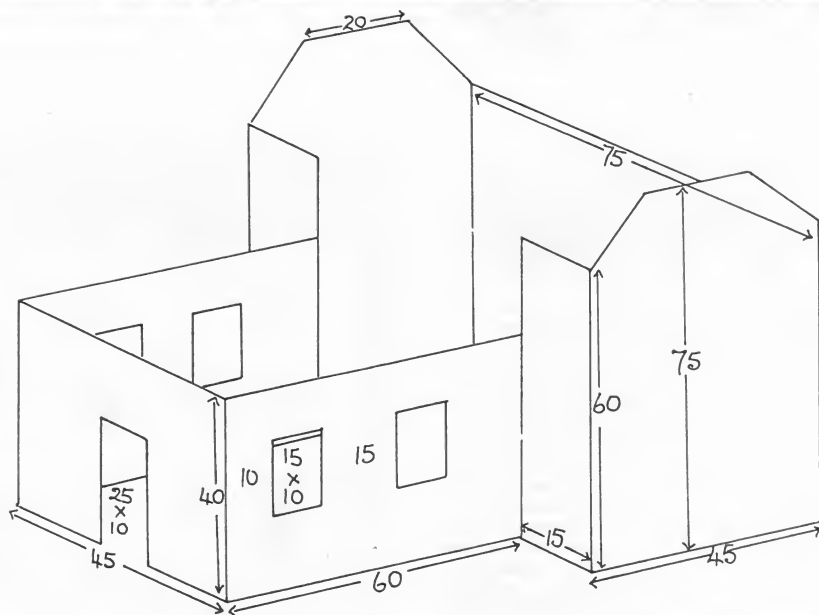
although this time it is rather sketchy in order to allow access to the upper floor.

Inner lean-to roof. Only a ruined roof is fitted here, using the same method as before.

Outer lean-to roofs. The damaged roof is 33 x 47 mm. Cement short lengths of match to the under side, 1 mm in from the edges, to enable this roof to be clipped over the walls. A chimney stack and a ruined roof are produced in the same way as for the cottage, except that the chimney stack is made from two pieces of 1/8 inch square balsa cemented side by side to produce a stack 1/8 inch deep by 1/4 inch wide.

Painting. (References are to Humbrol paints). House and cottage roofs were painted a red-yellow mix for tiles, the outer lean-to roofs Matt Sea Grey for slate. (You may think it more 'correct' for all roofs to be the same but in fact country people tended to use the cheapest and handiest material when adding to their properties and did not worry about aesthetics!) House and lean-to doors, windows and sills, white. Cottage doors, windows and sills, Brunswick Green. All exterior walls, Grass Green lightened with white to a pale lime colour. (The walls of the two dwellings could be painted different colours if preferred). All

Continued on page 30





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Continued from page 28

interior walls, white. I used a household emulsion paint. This does not cover very well and consequently gives a good 'soiled' effect if you have used grey card. Beams, Matt Khaki 26. Chimney pots, HS216 Rust. Matt black applied as described last month to damaged areas of the walls and beams. Bullet holes need to be 'picked out' again in order to show the grey interior of the holes.

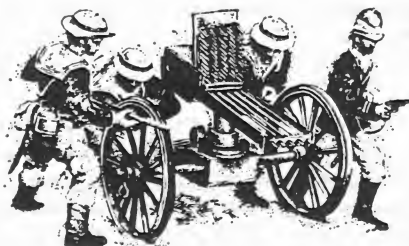
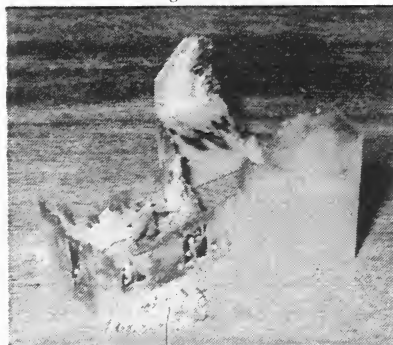
Belgian house

This is an attempt to portray the utterly destroyed building so often seen in battle areas, yet retain accessibility for figures. Fire has utterly destroyed the roof and most wooden parts, leaving only the shell of the building and two small pieces of the upper floor — kept only so that figures could be placed to greater advantage. The size of the building enables guns and tanks to fire from behind the cover of its broken walls.

Assembly. The basic shape of the building, which was part of a small town in the Ardennes, is shown by Fig 6 with all the necessary measurements. It consisted of a two-storey house with a Mansard or flat ridge roof and a single storey extension at the rear. As may be seen from the photographs of the finished model, a great deal of the walls was cut away. Bullet and shell holes were also added. Note that the corners tend to remain standing to a greater height than other parts of the building. A double thickness of brick embossed plastic card was used to show brickwork both inside and out, and irregularly shaped scraps of 10 thou plain card were cemented to the inner faces to represent the shattered plaster. Seel-masta was used to build up heaps of rubble at the foot of the walls, pieces of match and scraps of brick card being embedded in the material. In order to keep the high end walls at the correct spacing the front wall was not severed completely by the front door, a 5 mm 'step' being left in which was covered by the 'rubble'. This building could also be used for other wars, although it should be remembered that early 19th century field artillery would not have been capable of reducing a well-built brick or stone house to this state of ruin.

Painting. Brick card, unpainted. Plaster, HS202 Concrete. Timber, Matt Khaki. Matt black was applied sparingly to the rubble, round shell holes and along all the edges of the ruined walls. Excess paint was wiped off at once with a cloth. □

The devastated Belgian house.



1914-18 WVR and Motor Transport driver

DESPITE THE TREMENDOUS contribution that women made to the British war effort in both World Wars, releasing for active service many thousands of men who would otherwise have been tied down in non-combatant tasks, they have not seemed to inspire many designers or manufacturers, and are, in consequence, poorly represented in model terms. There have admittedly been a few figures of nurses available in some maker's lists: Britains issued Land Army personnel of both war periods in their farm range, and an ATS/WAAF of the Second World War for a short period, and there were a few Service women subjects by Johillco, Cherilea, and Charbens, but, broadly speaking, few pieces of this type have appeared, considering the diversity of tasks that women carried out, and the variety of uniforms that they wore.

The work of the nursing services is too well known to require further detailing here, and I dealt in a previous article with a British Army Nursing Sister of the late nineteenth century, but there were a great many other types of work in which women became involved, both of a military and civilian nature. In fact there was hardly any occupation essential to the efficient running of the country in which women did not come forward to take the place of men called upon to serve in the fighting Services.

Even allowing for the activities of the 'Suffragettes', who were campaigning for some years before the outbreak of the First World

Roy Dilley

model soldiers

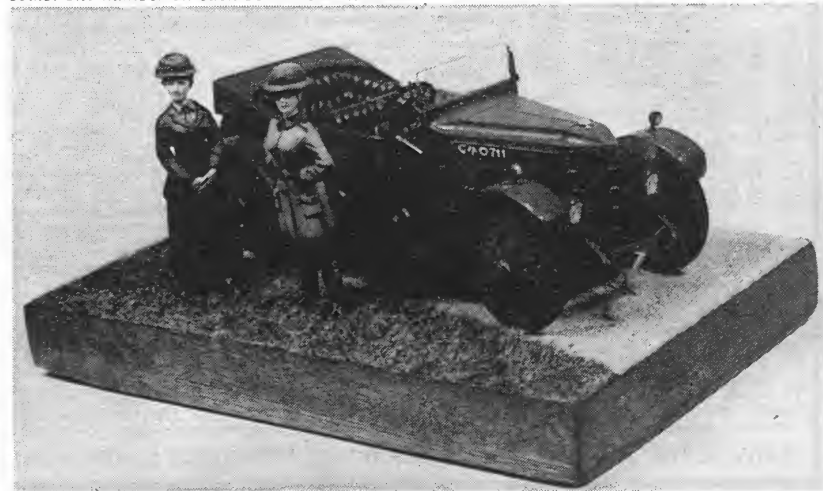
War for women to have equal rights with men to vote in elections and serve in Parliament, the belief was still widely held throughout the country that females were unsuited to the kinds of work associated with military service, transportation, and other jobs where hard physical labour was involved.

However a small number of far-sighted women were convinced that worthwhile service could be given in these areas, and in 1914 the Women's Emergency Corps came into existence followed closely by the Women's Volunteer Reserve. At the end of the same year was formed the Women's Legion, of which the Marchioness of Londonderry, one of the leading advocates of the usefulness of women in support of the Services, became the first Commandant.

Initially the activities of these organisations were concerned with the formation and operation of a Military Cooking Section, working under War Office auspices to replace male cooks in certain Army establishments, and with an Agricultural Section supplying women for work on the land. Later a Motor Transport Section was formed, and the Women's Legion in its various sections gave sterling and devoted service.

When, in March 1917, the Women's Army Auxiliary Corps was formed, its nucleus was made up from the Military Cookery and Motor Transport sections of the Women's Legion.

The complete model group on its base. Uniform colouring details are as follows: WVR — mid-khaki hat, khaki jacket and skirt, pale khaki shirt, tie and stockings. Shoes brown. Motor Transport driver — mid-khaki hat, khaki drill coat with khaki drab collar, khaki-yellow breeches representing Bedford Cord, and brown gaiters. The car is overall khaki with dark grey retracted hood and brown 'leather' seats. The number on each bonnet side is white.



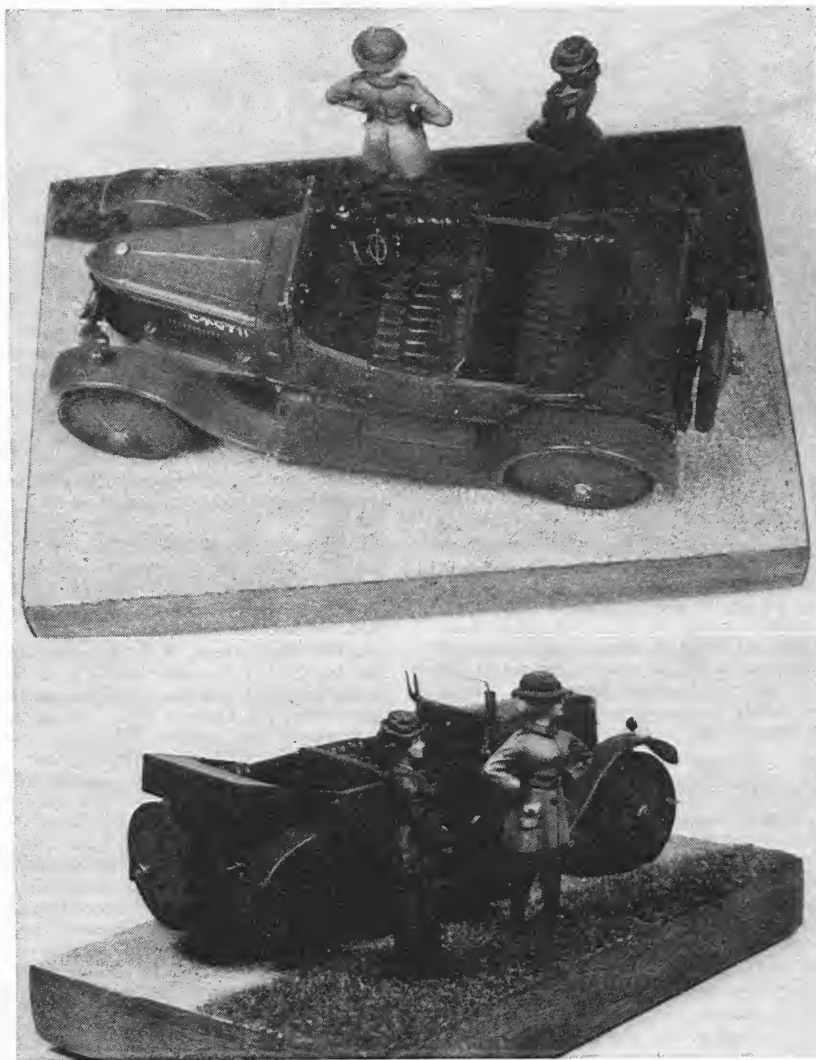
The WAAC served at Home and in France, constantly enhancing its reputation for hard, effective work, and so gallantly did its members behave during the alarms and excursions of the great German offensive in the Spring of 1918, that Queen Mary herself expressed her desire to assume the role of Commander-in-Chief of the Corps, which thus received the accolade of Royal approval, and was re-named Queen Mary's Army Auxiliary Corps.

Soon after the setting up of the WAAC in 1917, the Women's Royal Naval Service came into being, to be followed in 1918 by the Women's Royal Air Force. Thus all three Services, land, sea, and air, had their women auxiliaries before the end of the First World War, and these organisations, although disbanded after that war, were speedily re-constituted in time for the 1939-45 conflict, albeit the Army branch was now to be known as the Auxiliary Territorial Service, ATS, and the Air Force branch as the Women's Auxiliary Air Force, the Women's Royal Naval Service continuing under the same nomenclature as before. Serving throughout the Second World War with notable distinction, all three Women's Services established without possibility of question their ability to contribute work of the utmost value to the Forces, and this was acknowledged by their incorporation as part of the Regular Services, in which capacity they remain today, the ATS having been awarded the honourable title Women's Royal Army Corps, WRAC, and the WAAF also becoming 'royal' again as the Women's Royal Air Force, WRAF. In the Army and the Air Force the women's sections are fully parts of their respective Services, unlike the WRNS who, whilst to all intents and purposes part of the Royal Navy, do not serve under the control of the Naval Discipline Act.

My modelling subject this month shows two women volunteers of the 1914-18 period, one a member of the Women's Volunteer Reserve, the other a driver in the Motor Transport Section of the Women's Legion. Both are based on metal kits from the Valda range, the standard WVR figure, and the Land Army piece, which I have converted to make the driver.

The WVR was assembled more or less straight from the kit, after giving all the components a thorough brushing to remove any trace of metal oxidation, only a slight adjustment being made to the head position, I turned it slightly to the right to add a little individuality to the figure. Quick setting epoxy-type adhesive was used for all bonding: there are several excellent brands, such as Britfix, Devcon, Evostick, etc, readily available, and when all joints were firmly set the small gaps at the shoulders were filled in with Isopon resin as described in my last article. For this purpose, however, Green Putty or Humbrol Plastic Putty would have been equally suitable, provided a 'key' was made by roughening the surfaces to which it was applied.

All working marks and surplus material having been cleaned off or smoothed down, the whole figure was given a coat of Polyurethane varnish, brushed well into engraving to provide a seal against any future oxidising of the metal. When this had dried thoroughly, the figure was given two undercoats of Humbrol matt white paint, then painted using oil-bound poster colours, those marketed by Historex and Campaign Colours being good examples of this type



Two more views of the author's model.

of paint, both being supplied in a number of shades all of which are inter-mixable. The figure was plugged into its base only temporarily during painting, since it was later to be fitted on to the scenic base.

With the Land Army figure I carried out the same cleaning up process, turned the head, this time to the left, and carved the legs carefully to give the appearance of leather gaiters worn over riding breeches. Next Isopon resin was added to fill in the open lapels of the coat, and when set, was sanded down to represent a high-necked garment with closed turn-down collar. Then a pair of arms were notched on the insides of the elbows, bent, and epoxied into place with the hands resting on the hips, as will be seen in the photographs. Again, all joints were made good with filler as described above, and the coat of polyurethane varnish was applied before the painting sequence was carried out.

I decided to display these pieces on a simple scenic base, and, since I already had in my collection a suitable scale vehicle, an Airfix

'Prince Henry' Vauxhall painted as a staff-car, I also incorporated this into the scene. The base itself was made from a 6 x 4 inch piece of ¾ inch thick block-board, to the bottom of which was glued some green baize, and the edges were covered with strips of mahogany veneer. Surface ground work was kept to a minimum, consisting of just part of a 'gravelled road', this was coarse sand sprinkled over white PVA glue, and a strip of 'grass', cut from a sheet of railway scenic accessory material. In order to make it more pleasing to the eye, the 'road' was set at a slight angle to the longer sides of the base. Holes were drilled into the base through the 'grass' verge, and the pegs on the feet of the figures were epoxied into these. Finally the vehicle was glued into place.

This is a fairly simple exercise, making use of standard commercial figures, obtainable from Seagull Models, 15 Exhibition Road, London, SW7, yet it results in a pleasant and unusual set-piece, and a modest tribute to the work carried out by women in support of the Armed Services. □



Bruce Robertson

fighting colours 1914-1937

Part 15: Colour controversy and the Woodcock

AT NO TIME have the markings of fighter aircraft been more colourful, or as aesthetically pleasing, as in the middle years between the two World Wars. Perhaps this was because squadron personnel exercised their own good taste and were not subjected to ministerial decrees in this matter. To those who doubt such a state could exist within a highly disciplined service then a minute written on September 6 1924 by Air Commodore T. C. R. Higgins, as Director of Training at the Air Ministry, is quoted—

'I think it would be a good thing to regularise the present situation with regard to squadron markings, at any rate in Commands at home. Most squadrons at present have squadron markings on their aeroplanes, but are for the most part only known to the squadron. I think we should have some sort of record of such markings in the Air Ministry.'

Marking time

Higgins' minute sparked off a general discussion among senior officers in the RAF. Air Commodore Tom I. Webb-Bowen, commanding Inland Area and in overall control of all fighter squadrons, advocated a return to old wartime markings on fuselage sides, with additional indications on fins. He represented that unit markings were essential for fighters in air

fighting, when two or more squadrons were engaged, to facilitate quick identification in reforming after dog-fighting and to enable quick discrimination where two or more squadrons shared a station.

That September of 1924 the Air Ministry did make some record of the fighter squadron markings, but they differed in detail in some cases from what actually appeared on the aircraft.

Towards the end of that year the order on flight colours (see Part 13) was promulgated in which a passing reference was made to squadron markings — passing because the authorities could not make up their minds.

In 1926 the Director of Organisation and Staff Duties, Air Vice-Marshal Sir I. L. B. Vesey, proposed that the matter be put to Commander, Air Defence Great Britain, to work out the most suitable scheme over the next year. To avoid jazzing up — to use a phrase of the period — a fighter, Avro 504Ns at Manston were painted in various schemes for the trial. On July 11 1927, the Chief of the Air Staff, the famous Sir Hugh (late Lord) Trenchard, visited Manston and passed comment on the Avros in variegated colour schemes. A written explanation from Air Vice-Marshal Vesey stated that they were apparently representative squadron markings being assessed by Air Defence Great Britain. Trenchard, to

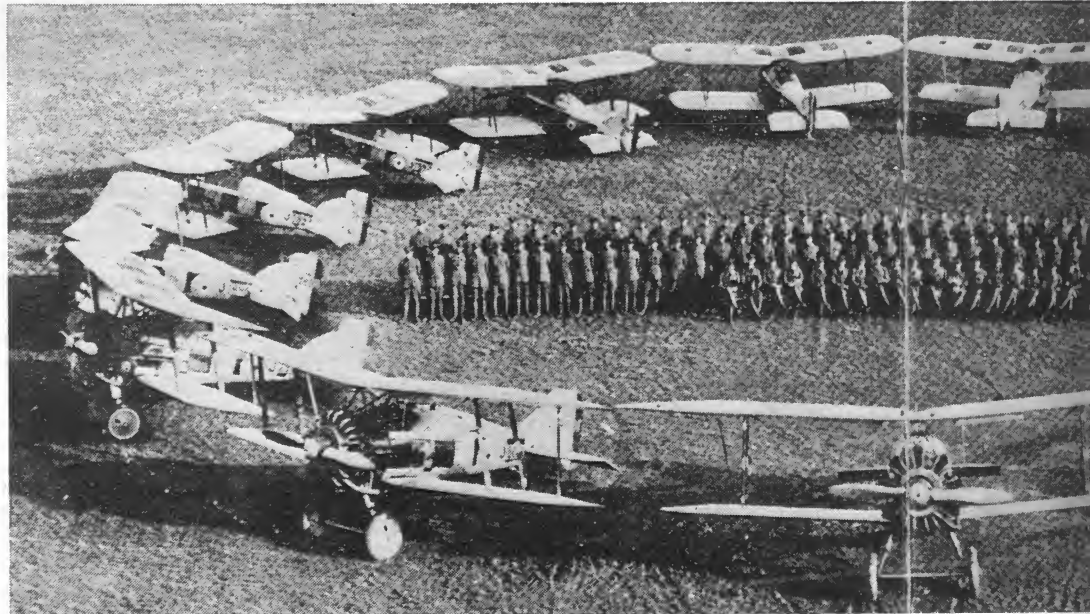


finally resolve the squadron markings question, wrote back a brief minute to Vesey — 'Please press AOC, ADGB in October for his report. Otherwise we shall get our aircraft looking as if they were being prepared for a circus.'

The report was submitted to the Air Ministry later in the year, showing the markings of units in Fighting Area of Air Defence Great Britain as in use during November 1927. Units in Fighting Area comprised twelve fighter squadrons (Nos 1, 3, 17, 19, 23, 25, 29, 32, 41, 43, 56 and 111) a communication squadron and two flights. The markings of the fighter squadrons will be detailed with the aircraft types concerned in this series. Since it was logical to have the RAF's communication squadron (No 24) near the capital, around which the defending fighters were based, it came within Fighting Area's command. Its aircraft had been marked with chevrons on the fins, but more recently the aircraft had also been embellished with red and black chevrons along the top wing like fighter squadrons. After all, some of their communications aircraft were Bristol Fighters.

	Red
	White
	Blue
	Black
	Aluminium
	Dark grey
	Emerald green
	Natural metal

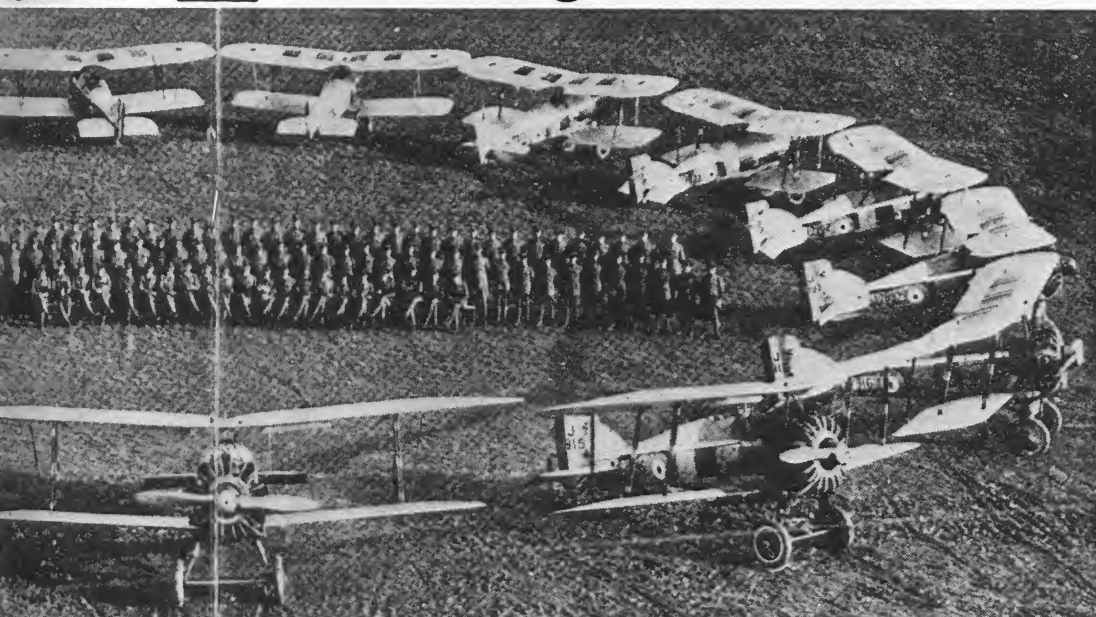
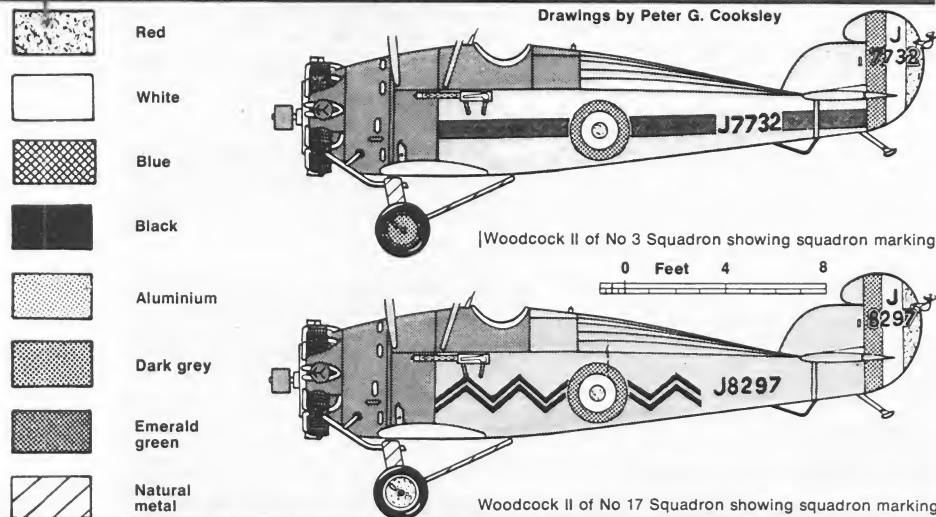
Last month markings were given for a Gamecock of No 23 Squadron; in this unique picture every Gamecock in the squadron in late 1926 is shown. They are, starting from the near centre aircraft and working clockwise: the Commanding Officer's aircraft, identity not known; J8041; J7910; J7895; J7893; J7892; J7894 presumed; two aircraft at top centre placed in that position because engines were not fitted and presumed to be J7896 and J7903; J8040 presumed; J7899; J7902; J7897; J7916 and J7915. The CO was Squadron Leader (later Air Vice-Marshal) Raymond Collishaw, now the highest scoring surviving ace of the First World War.





A formation of No 3 Squadron Woodcock IIs. In November 1927 the squadron was reported by Air Defence Great Britain to Air Ministry as having an 8-inch green band along fuselage side and a 24-inch green band along the top wing between the two roundels (Ministry of Defence H1141).

markings question, Vesey — 'Please per for his report. craft looking as if a circus.' to the Air Ministry markings of units nce Great Britain 27. Units in Fight- ighter squadrons 32, 41, 43, 56 and adron and two ighter squadrons craft types con- as logical to have adron (No 24) ch the defending within Fighting ad been marked ore recently the shed with red and wing like fighter f their communi- Fighters.



One of the two Flights in Fighting Area was the Night Flying Flight at Biggin Hill with Hawker Horsleys and Bristol Fighters. Since the object of markings was unit identification which would be impracticable at night, they had no mandate for embellishing their aircraft. The other Flight was Station Flight, Duxford, the only station with three squadrons at the one location at that time. The Avro 504Ns of the Station Flight were marked with a one foot blue band around the fuselage, 2 feet 6 inches aft of the roundel, with one inch edging in white.

Delaying a decision of the future of unit markings was a new scheme dreamed up by a branch of the Air Ministry, using symbols such as stars, circles and dumbbells in association with a series of bars for 'A', 'B' or 'C' Flights as a coded means of squadron identification for all squadrons. It was finally dismissed as impractical, being too complicated and difficult to memorise, and that it might be awkward to cram in the three-bar markings for 'C' flights on the fuselage sides of fighters.

On May 23 1929 the final decision was made by the Air Ministry. The single-seat fighter squadrons would continue to mark their aircraft as before, with the proviso that No 24 (Communications) Squadron, within Fighting Area, should not have its aircraft's top wings marked in 'fighter fashion'. The fighter markings of the colourful 'twenties were thereby assured for the early 'thirties.

Hawker Woodcock

Among the fighter types to which these markings applied was the Hawker Woodcock. The first prototype J6987, appearing in 1923 as the Woodcock I, had an Armstrong Whitworth Jaguar engine, but J6988, the second prototype with a Bristol Jupiter engine, was designated Woodcock II and bore the Hendon Air Parks No 2 for the 1924 RAF Pageant.

Production aircraft as Woodcock IIs were built to six orders to equip two squadrons as follows:

J7512-7517 ordered August 1924 of which the first was retained initially for tests and the remainder reached No 3 Squadron at Upavon in 1925 on May 12, June 6, July 28, July 7 and August 8 respectively. Later J7515 became G-EBMA on the civil register.

J7592-7595 to No 17 Squadron except J7594 to A&AEE.



Woodcock II of No 17 Squadron. In this case the black zig-zag lines extend to the rear fuselage and the serial is marked over them. In November 1927 the dimensions of the markings were reported as 2 feet 6 inches per zig-zag with the black lines 2 inches apart.

J7724-7737 ordered March 1925 and going mainly to No 3 Squadron of which J7736 stalled from 400 feet and crashed February 2 1927.

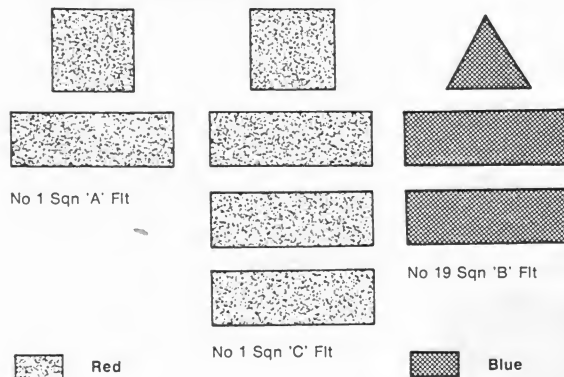
J7783 replacement order. Served in No 3 Squadron.

J7960-7977 ordered September 1926 for Nos 3 and 17 Squadrons' replacements. J7974 was fitted with slotted wings at Farnborough.

J8292-8316 ordered February 1927 for Nos 3

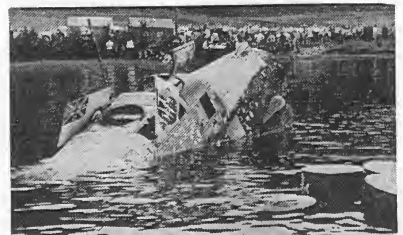
and 17 Squadron replacements and for store. J8312 used in experiments with engine cylinder helmets.

In 1928 the Woodcocks were replaced by Gamecocks in both Nos 3 and 17 Squadrons. Three were built additionally for the Danish Navy (Nos 151-153) and the Royal Dockyard, Copenhagen, built a further 12 (Nos 154-165).



What might have been. Examples of the squadron marking identification scheme proposed mid-1928 using different symbols such as discs and dumbbells, or as illustrated, to denote squadrons using the same aircraft type, with one to three bars denoting A to C Flights respectively, in colours arbitrarily allotted, to be displayed on fuselage sides aft of roundels and on upper surface of top wing and lower surface of bottom wing.

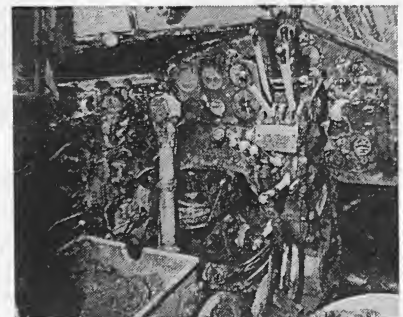
A look ahead in Woodcock time. Built to Specification 20/27 the de Havilland DH77 interceptor was powered by a Napier Halford H (later named Rapiet I) engine. First flying in December 1929, it is one of the few monoplane fighters to bear the finish of the 'twenties.



Up she comes! Supported by 31 oil drums filled with air, Halifax II TL-S:W1048 lifts her nose above the water which had preserved her for over 30 years, watched by an eager crowd of aviation enthusiasts on the bank (MoD photo).

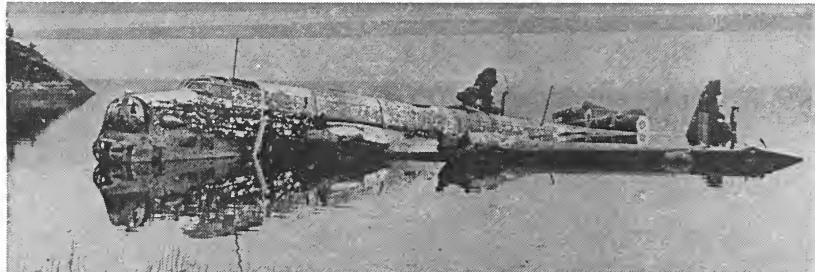
ON APRIL 27 1942, eleven Halifaxes of 35 Squadron took off from RAF Kinloss on a low-level bombing raid against the German battleship *Tirpitz*. One of these was TL-S:W1048, an ex-102 Sqn Halifax II with a new crew led by Flying Officer Don McIntyre. Arriving over the fjord where the *Tirpitz* was lying, the aircraft dived into the smoke screen put up by the Germans in an attempt to drop her mine. At this point she was hit by flak, but McIntyre succeeded in keeping her in the air until he spotted a frozen lake, where he belly-landed. Only one member of the crew — the Flight Engineer — was injured, and subsequently captured by the Germans. The remaining members of the crew escaped on foot to Sweden where they were interned for six weeks before being exchanged for a German aircrew and returned to England. W1048 sank through the ice over the lake into 90 feet of water, where she has remained until this year; when a team of sub-aqua enthusiasts from RAF Strike Command, in collaboration with civilian enthusiasts including the Norwegian Aviation Historical Society, decided to recover her. The recovery operation, under the direction of Sergeant David Walker from RAF West Drayton, was accomplished in the remarkably short time of 15 days, and RAF restoration experts are astounded at the aircraft's condition after 31 years in the drink — some of the lights were still in working order! W1048 is now in the capable hands of a working party of RAF engineers from RAF Bicester who are bringing her home to England where, eventually, she will go on display in the RAF Museum at Hendon — the last known surviving Halifax in the world.

The remains of the flight deck, covered with silt but remarkably uncorroded. The instruments are still readable and many controls still move without greasing (MoD photo).



Come in 'S for Sugar' —your time is up

Photo story of a remarkable salvage operation which would make an unusual diorama subject, by **Bruce Quarrie**



Above and below ready to be pulled out of the water. The air bags under the port wing were used to lift her over a sand bank near the shore (top photo MoD; bottom Bjorn Olsen).

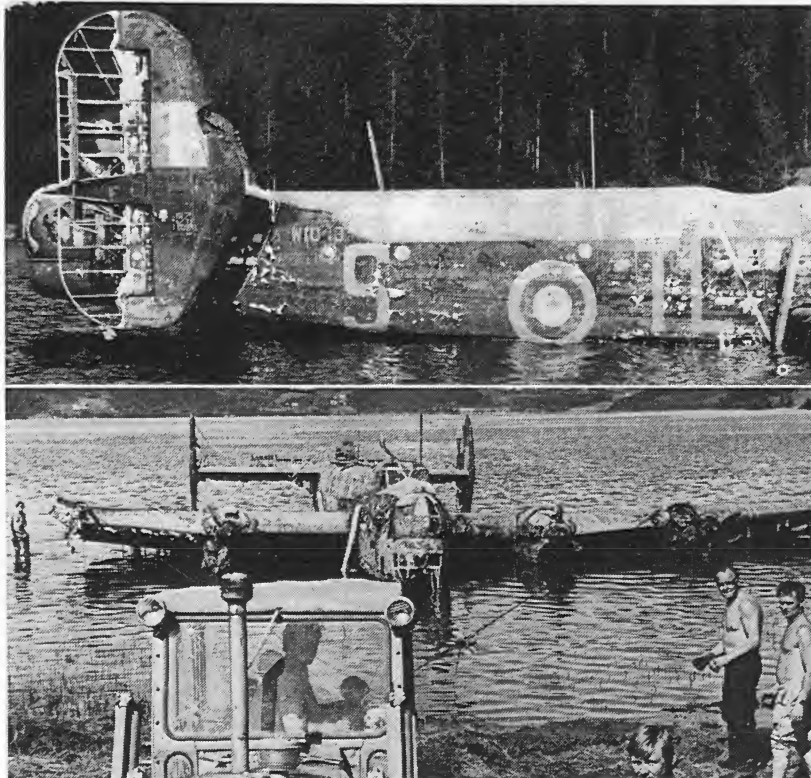
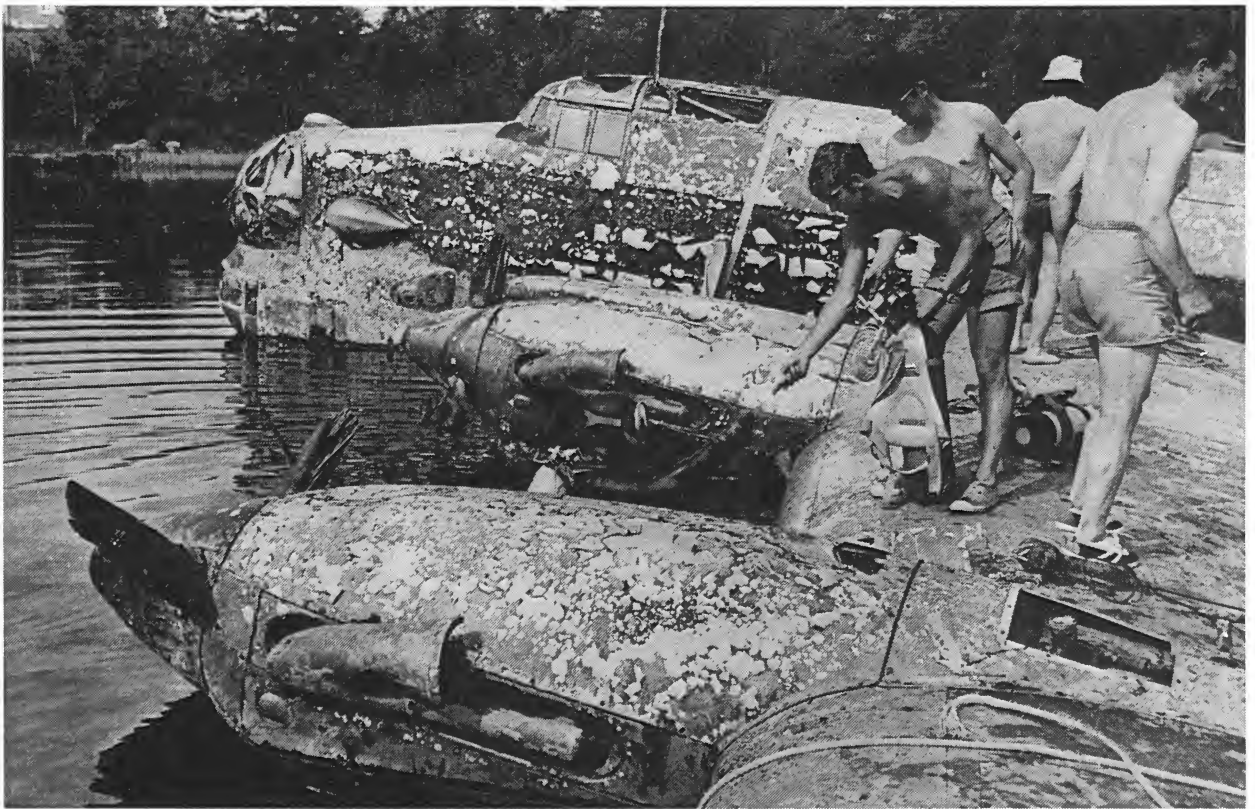


Above close-up of the nose section showing the flaking paintwork and buckled plates (Bjorn Olsen photo). W1048, along with W1047, 1049, 1050, 1051 and 1053, was specially modified for mine-dropping operations. Code letters of these aircraft for modellers wishing to make alternatives were: TL-R, TL-V, TL-F, TL-C and TL-G respectively, 1048 being -S.

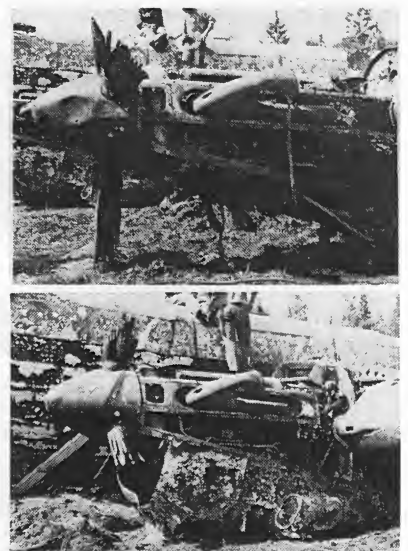


Above Sergeant Dave Walker (right), leader of the recovery team, hands over to Warrant Officer Jack Davis (left), leader of the 71 MU detachment which is bringing W1048 home. **Left** just before being pulled out of the water, showing some of the oil drums used in the salvage operation and the air bags under the wings. **Bottom left** almost ashore (photos by Bjorn Olsen).

More photos on next page



Above fine detail shot showing upper wing surface, engine nacelles and 'damp wallpaper' effect of the peeling paintwork (MoD). Left fuselage side showing the early-style grey codes and type A.1 roundel with broad yellow outer band (Bjorn Olsen). Bottom left back to dry land via caterpillar tractor (MoD). Below close-ups of the port outer (top) and port inner engine (Bjorn Olsen).



The scene: New York, May 1969.
The event: The Daily Mail Transatlantic Air Race.

A small, stub-winged jet fighter swoops in from the sea and heads for Manhattan. As it nears the cluster of Skyscraper blocks it begins to slow down . . . slower and slower, until it's hardly moving at all. It hangs, incredibly, way above the ground, engines whining, dwarfed by gigantic buildings. Then, to the astonishment of watching Americans, it slowly descends to the ground. Hawker-Siddeley's Harrier – first operational VTOL combat aircraft in the world – has arrived.

The pilot, Squadron Leader Lecky-Thompson RAF, won first prize for the fastest overall London to New York time . . . just 6 hours 11 minutes 57 seconds!

The starting point was London's GPO Tower – so Lecky-Thompson hopped into his Harrier in a disused coal yard at nearby St. Pancras station. The finish was at the Empire State Building in New York – just one minute away from the pier on which he landed! 50 years after Alcock and Brown's first Transatlantic flight, Lecky-Thompson made history with a "Jump Jet".

Back in the middle fifties, Harrier, then designated the P.1127, was a private development by the Hawker-Siddeley and Bristol Engine companies. And, in common with many other highly regarded aircraft produced in Britain since the war, spent its formative years being jeered at by politicians and Air Staff. Eventually, two prototypes were ordered, and on October 1st 1961, the first 'hovering' flight was made – at a tightly tethered 18 inches off the ground



altitude! A further four prototypes were made for the Ministry of Supply and on September 12th 1961, the P.1127 demonstrated the swivel-nozzle transition from vertical to forward flight.

Now the project was gathering momentum and nine more P.1127's were built in 1964 for Service evaluation and were called Kestrels. These became known as the 'Tripartite Nine' as they were tested by a combined team from the RAF, US Army & Navy and Luftwaffe. By 1969, the P.1127 had become a production aircraft and named the Hawker-Siddeley

The Harrier of up to around 1,500 mph. It can land in an area no bigger than a tennis court. It carries a heavy armament but can be equipped with under-wing rocket batteries and tanks and napalm service with the Marine Corps.

can fly at speeds up to Mach 1, yet can carry a load larger than a ten-ton in-built armament fitted with a variety of stores – from rocket gun pods to drop tanks. It is now in service with the RAF and the US

Up date your collection with Revell's superbly detailed 1/32nd scale Harrier.

Revell's choice of 1/32nd scale gives superb reproduction of authentic detail inside and outside the aircraft, a model length of 17½" and a wingspan of 9½". The kit includes extra decals, to enable RAF or US Marine Corps variant to be built; two missile pods, two cannon pods and two drop tanks. A removable panel reveals the intricate detail of the Pegasus engine and the unique swivel jet nozzles. Other features include movable wheels, a wealth of cockpit detail including instrumentation and pilot in flying kit.

The Harrier kit, priced at £1.70, is terrific value for money and is the latest addition to the Revell range of nearly 250 models, in which many famous aircraft, past and present, are featured. To find out more about the range send 20p to Revell for their full colour catalogue. For immediate action, take off for your local stockist and get the Harrier into service with your squadron.



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**the
door to
door jet**





charge of the light brigade

13th Light Dragoon trooper by Sid Horton

THE 13TH LIGHT Dragoons comprised two squadrons in the first line. Unlike the 17th Lancers who were on their left, they did not overlap the guns, so they sustained heavy casualties. They paraded that morning 128 strong and returned — 14 killed, 30 wounded and 12 prisoners — according to what I think is the most authoritative information, contained in *Honour the Light Brigade* by W. M. Lummis and Kenneth G. Wynn, which I mentioned last month.

Uniform information, need I say — *Uniforms & Equipment of the Light Brigade* by John and Boris Molloy.

Parts needed for this conversion are the hussar and shabraque from the Airfix Hussar kit, the horse and blanket from the 'Grey kit, and haversack and water bottle from the Coldstream Guard. So an expensive conversion by earlier standards but one, I think, which should give pleasure.

I will deal with the horse first because the figure can more easily be tailored to fit the finished horse.

Horse

Take the horse from the 'Grey kit and, carefully using a razor saw (as in earlier articles) remove both rear legs. These are cemented back into the slightly different positions shown in drawings 4 and 6. They are braced from the inside with scrap plastic and left to dry.

Now cement the two body halves together and allow to dry out thoroughly, preferably

overnight. Again, carefully using a razor saw, using drawings 1, 2 and 3 as guides, saw right through the neck about five times and shape each of the individual pieces to wedge shapes by removing the shaded areas. Note that drawing 2 is a top view of the neck. Now, using drawing 5 as a guide, cement these pieces together again, inserting scrap plastic between each one on the right-hand side to make the neck curve to the left. This is again shown in drawings 4 and 6.

You will notice in these drawings that the neck appears longer in drawing 6 than it is in 4. This is because the drawings have been made without perspective, to make them easier to work from.

After the neck has been allowed to dry out thoroughly, the body cuts can be made. Small wedges are cut from these, shown by the shaded areas in drawings 1 and 3, so that, when they are cemented together, they allow a new curve to the backbone. When the whole lot has dried out, the extensive filling can be done using Green Stuff and sanded to shape.

The head is also, at this point, cemented in place, as is the tail.

So that the horse will stand on its neck a hole has to be drilled up through the base and the near-side front knee cap. A pin is then pushed up through the base and cemented in place with a five-minute epoxy adhesive. Another may be needed going up through the neck where it touches the base.



Take the sheepskin from the Hussar kit and carefully cut away the shabraque, shown as the shaded area in drawing 11. Cement the two halves together and, when dry, saw right through the sheepskin, just behind the hump. A wedge of scrap plastic has to be added, shown as the black area in drawing 12, to allow the sheepskin to follow the new line of the back. This is then filled and sanded smooth.

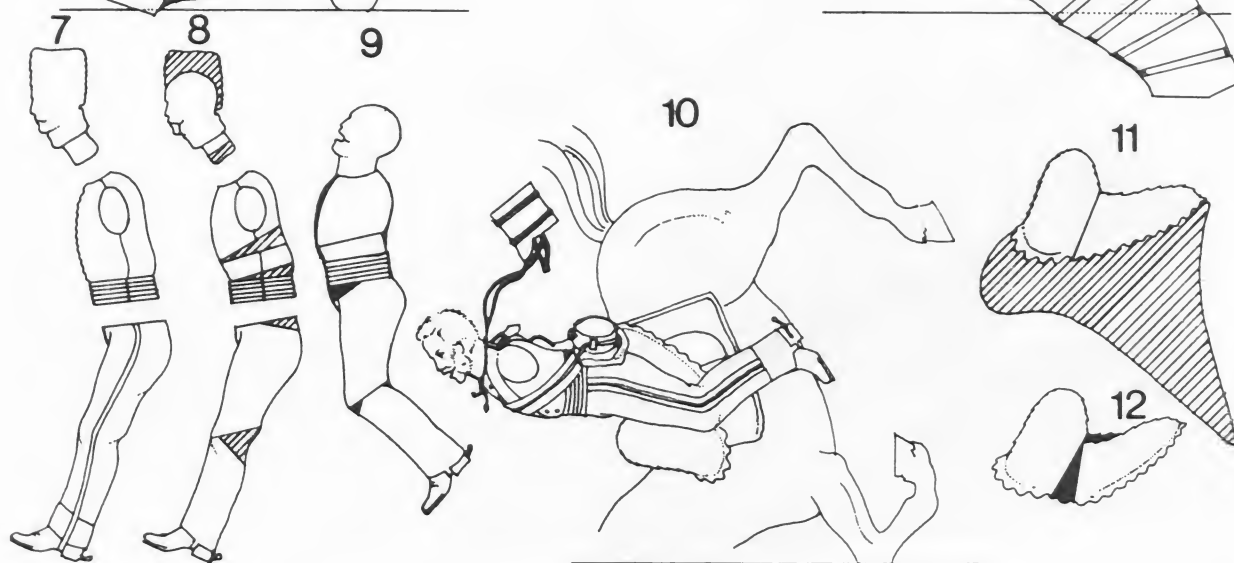
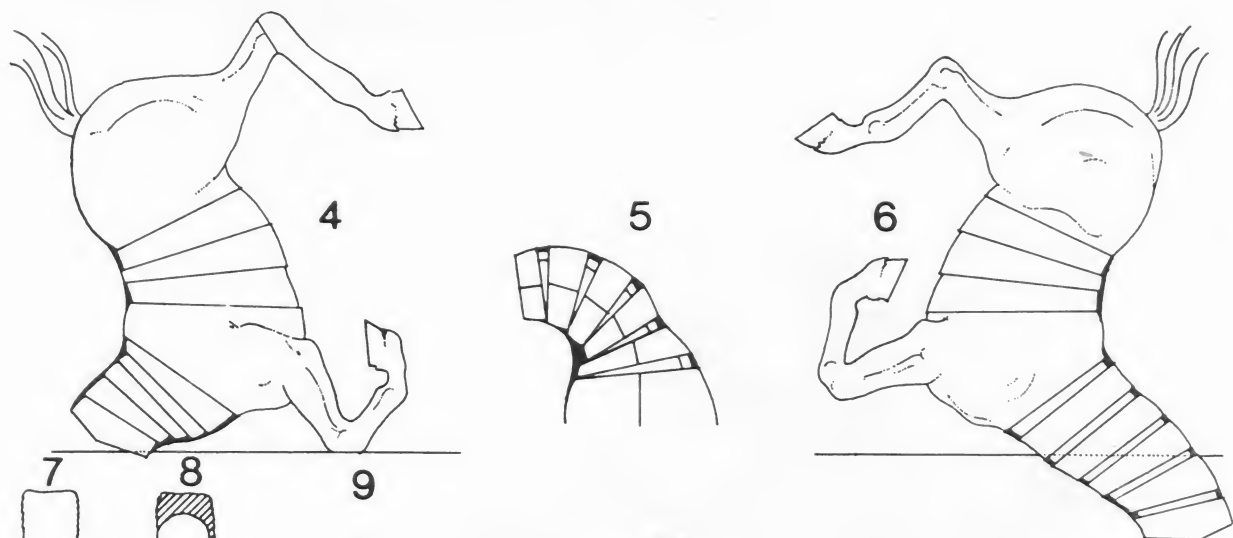
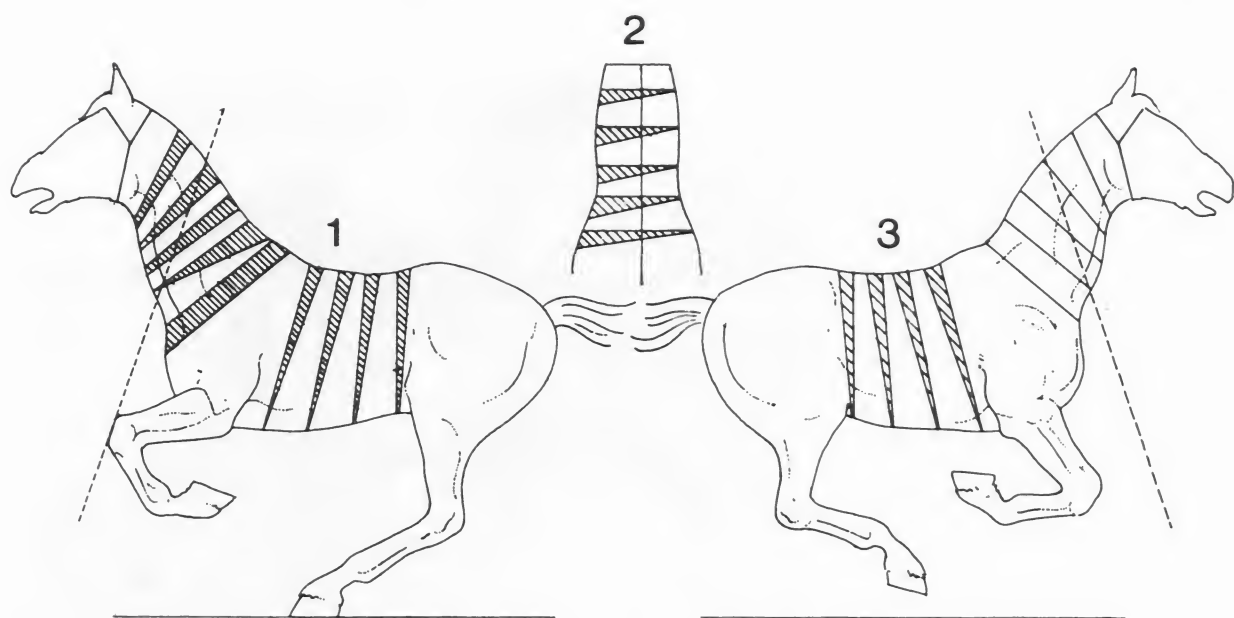
Now, cement the sheepskin on to the horse and allow to dry. The mane can also be cemented in place at this point. Take the blanket from the 'Grey kit and cut to a rough shape to follow the sheepskin. Cement this in place butt-jointing it against the sheepskin. Any small gaps are filled and sanded smooth. All leather work is made from the 5 thou plastic card supplied with the kits. The reins are made from gift tape, because this is softer and has the right 'fall' to it. Now all the hard work is done we can turn our attention to the figure.



Above and right two views of the finished figure just about to 'hit the deck'. Note the shako 'flying' out behind on cap lines of fuse wire, the falling reins and 'lifted' haversack etc. Note also that the figure's foot has fallen out of the stirrup and that his body has in fact left the saddle.

Key to line drawings opposite

1 near side of horse; remove shaded areas. Dotted line shows new ground level. 2 top view of neck; remove shaded areas. 3 off side of horse showing cuts. 4 near side, showing new leg positions. 5 top view of neck showing scrap inserts and filling. 6 off side showing scrap inserts (note no perspective). 7 figure as kit. 8 figure showing cuts. 9 figure showing filling. 10 finished figure. 11 sheepskin; remove shaded area. 12 sheepskin showing filling.



Figure

Take the figure from the Hussar kit. The untouched figure is shown in drawing 7. Take the head and, using drawing 8 as a guide, carefully carve to a bald headed shape and sand smooth. The mouth can be opened by using a new blade. Carefully cut straight down from the corners of the mouth and between the lips. The lower jaw should now drop away, like that of a ventriloquist's doll. It can be cemented into any open position using Mek-Pak or a similar liquid adhesive. Fill any slight gaps and sand smooth. Also, at this point, remove most of the sprue beneath the collar. Now put the head to one side to be worked on later.

Cement the two body halves together and allow to dry. Then the two small wedges shown as shaded areas in drawing 8 are removed using a razor saw. Cement the pieces together as in drawing 9 giving a new curve to the back. Fill and sand smooth. The head can now be cemented to the body.

Take the legs from the Hussar kit and carve away the raised stripe. Sand smooth. Cement the legs together and allow to dry. Now, sand away the small wedge at the waist back, shown as the shaded area. Turn round and cement to the waist front shown as a black area in drawing 9. Saw right through both legs and remove the wedges shown as the shaded area in drawing 8. The legs are then cemented back together into the bended position shown in drawing 9. Fill and sand to shape. The hair and sideburns can now be built up by applying Green Stuff in

Rear view of figure clearly showing the amount of work to be done on the horse's neck and body. Readers of this series of articles will be interested to know that a mounted figure of Lord Cardigan as he appeared at Balaclava, also by Sid Horton, is featured in the new Airfix Magazine Annual.



A view of the completed figure from the other side. Note that the leg on this side is bent to a different angle, also scabbard and other pieces of equipment flying out behind.

small amounts with a needle, building into a hair-like texture.

The arms are not shown in the drawings so as to aid clarity, but are simple enough as shown in the photographs. The right arm is straight from the box. The hand is removed and a small wedge removed from the wrist, then cemented back in place. The left arm has a saw cut right through the elbow. A wedge of scrap plastic cemented in place from the inside of the elbow, this straightening the arm. The hand is treated in the same way as the other.

Pouch and haversack belts are made from the 5 thou plastic card supplied with the kits, but the sword slings from gift tape, as this is softer and, again, falls more convincingly. The sword and scabbard are No 94 from the Historex Spares List. The haversack and water bottle from the Coldstream Guard kit.

The shako is made by wrapping 10 thou plastic card round a pencil, held in position with cotton and dipped into very hot water for a few minutes. It is then cut to shape and the edges cemented together. A circle of 20 thou plastic is cemented to the top. The cap lines which go round the shako are made from stretched sprue, but the lines which join the shako to the body are made from fuse wire to allow the shako to 'fly' behind the figure.

All paints are from the Humbrol range.

Shako Oilskin cover — mix tarmac and black as this gives a slight sheen. Cap lines — yellow; Chin scales — brass.

Coatee Navy blue, brass buttons; Turnbacks, piping and collar — buff (in practice — white). Waist belt — 3 yellow and 2 red stripes; Pouch belt and haversack — white; Pouch — black; Water bottle — navy blue with a brown strap.

Overalls Mid-grey with two white stripes; inserts of black leather and 'booted'. Boots — black; Spurs — silver.

Sheepskin Black; Blanket — mid-grey; All leather work — brown with brass buckles; Silver bit.

squadron codes and colours 1939-1956



By Michael J. F. Bowyer and John D. R. Rawlings

C2 ?
No unit allocation certain, but Hastings C2-H:WD488 is known to have served with 47 Squadron.

C3 ?
No unit allocation known.

C4 ?
No unit allocation known.

C5 357th Ftr Group, USAAF (c)
Carried by P-51s of 364th Ftr Sqn.

C5 Station Flight, Tibbenham
Used post-war by aircraft of the Station Flight. Proctor 1 P6252 reported coded C5 at this time, when it was serving with No 1 ADF Fighter Command.

C6 51 Squadron (c)
'C' Flight of 51 Squadron was initially coded 'LK'. This element broke away in January 1944, to form the nucleus of 578 Squadron. The replacement 'C' Flight on 51 Squadron then adopted the code C6 which it wore until Halifaxes were withdrawn from the unit in May 1945. Example: C6:B-LW677.

C7 496th Ftr Group, USAAF (c)
Carried by P-38/S1s of the 555th Ftr Sqn December 1943 to June 1945.

C7 No 1 Ferry Pool (?)
Said to have been carried by Ansons and Oxfords of this unit, but this remains unconfirmed.

C8 640 Squadron (c)
Formed January 7 1944 at Leconfield and equipped with Halifax IIIs, eg C8:O-NA222. Disbanded May 7 1945.

C9 ?
No unit allocation known.

1C Station Flight, Scampton (c)
Allocation confirmed. Letters used on Ansons, eg 1C:G-VM393, and Oxfords, eg 1C:E-LX431. Letters in use 1945-47.

2C 487th Bomb Group, USAAF (c)
Carried by B-24s of the 838th Bomb Sqn April 1944 to August 1945.

3C ?
No unit allocation known.

4C ?
No unit allocation known.

5C 416th Bomb Group, USAAF (c)
Carried by A-20 Havocs and later A-26 Invaders of this unit, March 1944 to October 1945.

6C Photographic Development Unit (c)
Post-war coding of the PRDU, used from 1945 to about 1950. Carried on PR Mosquitoes and Spitfire PR XIXs, eg 6C:X-PS925. Also reported on Hornet 6C:R-PX216.

7C 296 Squadron (c)
This squadron formed on January 25 1942 flying Whitley Vs with the airborne forces. It was not until about March 1944 that its Albemarle (first received at the end of 1942) began to wear 7C coding. Halifaxes replaced the Albemarles in October 1944, 7C:C-NA657 then being an example.

8C 12 Maintenance Unit (c)
Confirmed allocation. Probably used 1945-1948.

9C ?
No unit allocation known.

1DA 210 Squadron (c)
Used from September 1939 to about May 1942.

Sunderlands at first used such as DA:A-L5798. Catalinas replaced these in April 1941 and DA:A was AH531 in July 1941.

DA 273 Maintenance Unit (c)
Allocation confirmed, but no details of allocation are to hand.

DA Unknown
There was a unit at Blackbushe in 1945-46 using Ansons coded DA, eg DA:M-NK707. The designation of this unit remains unknown.

DB 411 Squadron (c)
Formed June 15 1941 at Digby. Code carried until disbandment on March 21 1946. Used successively on Spitfires Mk I, IIA, VB, IX, XVI. Example DB:S-EN574.

DB Unknown
Reports link Auster NJ629 with the code DB:K. Its unit identity is unknown, but it could have been used by 411 Squadron.

DC 392nd Bomb Group, USAAF (c)
Carried on B-24s of the 577th Bomb Sqn August 1943 to June 1945.

DC Station Flight, Oakington (c)
Allocation confirmed but no evidence of use.

DD 22 OTU (c)
Unit formed April 14 1941 and disbanded July 24 1945. Letters successively used on Wellington 1C, III, eg DD:M-X9943 and Mk X, eg DD:S-LN546.

DE 61 OTU (c)
A 'squadron' wearing this coding was added to 61 OTU some time in 1944, but its period of existence is unknown. It used Spitfire XVIs at one time including DE:N-SL552.

DF 221 Squadron (?)
This coding was in use on Wellingtons in Britain in 1941, and it seems likely that this was the coding of 221 Squadron. No confirmation has ever come to hand. When it was operating in the Middle East the squadron carried no unit coding on its torpedo and reconnaissance bomber Wellingtons.

DF 91st Bomb Group, USAAF (c)
Carried by B-17s of the 324th Bomb Sqn December 1942 - May 1945. An interesting point is that some B-17s of the 94th Bomb Grp were carrying this coding in March 1943. It is believed that this was a rare instance in which codes were worn by two units at the same time, for security reasons in an effort to 'fog' the enemy. They were known as 'foggy codes'.

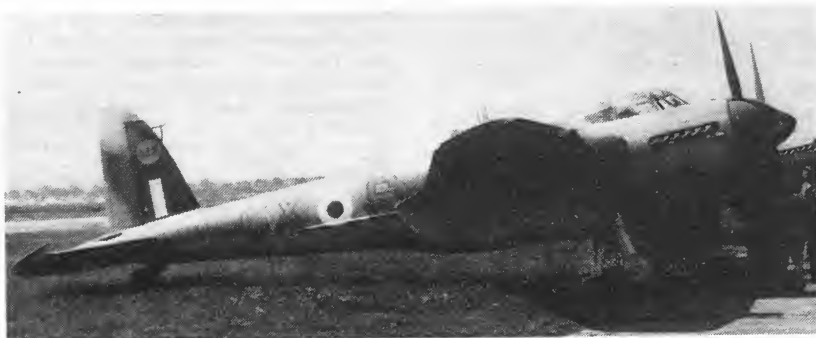
DF Central Bomber Establishment (c)
Before it became the CBE this unit at Marham, still the Bomber Development Unit, was coded GN. By 1947 'DF' was in use and the unit had become the CBE. Codes were retained until 1949 on Lancasters, Lincolns and Mosquitoes, eg DF:V-PF446, a Mosquito 16.

DG Unknown
This combination was certainly used. Pre-war Battles flew wearing it then allocated to 150 Squadron. A wartime photograph of a Battle illustrates DG coding, the machine wearing the serial K9483. Oddly enough this machine served at that time with 150 Squadron which wore the wartime coding JN. Persistent reports that 228 Squadron was coded DG can probably be discounted.

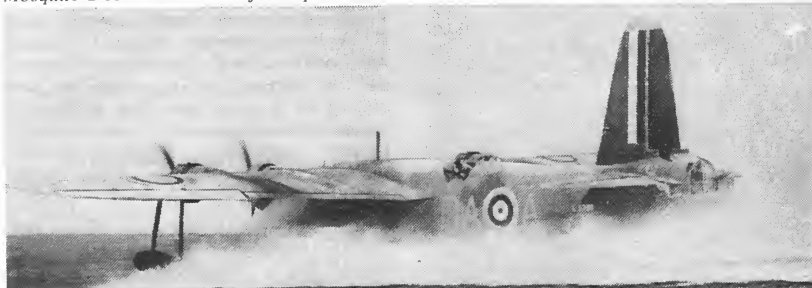
DG 422 Squadron (?)
Sunderland EJ151 carried the letters DG:H. Although this machine served with 201 and

WX495, a Neptune coded C-K of 236 OTU photographed in 1955. She also served as 'C-J' and was at one time 'A-F' of 217 Squadron (MoD).





Mosquito B 35 TA694: CX-S of 14 Squadron in 1948 (M. Olmsted).



Sunderland L5798: DA-A. Joined 210 Squadron September 8 1938 and served until 1940 when this photo was taken. Subsequently used by Nos 201 and 204 Sqns, serving with the latter in West Africa (IWM-CH840). Below Lincoln RF484 of the Central Bomber Establishment in 1947.



Above Spitfire VIII DG: A-MV483 of 155 Squadron in 1944 (J. Geeson). Left Mosquito PR 34 PF679: DH-A of 540 Squadron photographed by P. Clifton at Northolt on September 25 1948. The aircraft passed to 58 Squadron on August 29 1952 serving until July 1953.



then 228 Squadrons the DG coding was carried sometime between November 1944 and June 1945 when it was flying with 422 Squadron. DG was almost certainly the coding of 422 Squadron.

DG 155 Squadron (c)

This squadron formed on April 1 1942 and was soon equipped with Mohawks, eg DG: C-BJ545 in use in 1943. In January 1944 it was re-armed with Spitfire VIIIs, eg DG: V-MD220, these being retained until December 1945.

DG Unknown

The letters DG were recorded on Auster MT514-DG: M. Unit identity has not yet been established.

DH 1664 Heavy Conversion Unit (c)

Unit formed May 10 1943 at Croft. It was later based at Topcliffe and Dishforth. It disbanded April 6 1945. Equipment included Halifax IIs, IIIs and Vs, eg DH: M-DG280, a Mk II. In 1944 it began flying Lancasters.

DH 540 Squadron (c)

Although 540 Squadron was formed October 19 1942 its Mosquitoes remained uncoded until after the war, DH being carried from 1946. Mosquito PR34s remained in use until July 1953.

DI 390th Bomb Group, USAAF (c)

Carried by B-17s of 570th Bomb Squadron July 1943 - August 1945.

DI Station Flight, Kemble

Allocation confirmed, but no details of use known.

DJ 'C' Flight, XV Squadron

Probably carried for a brief period by Stirlings and Lancasters of XV Squadron, although no proof or individual identity seems to have been furnished.

DK 158 Squadron (c)

No 4 (Bomber) Group very quickly switched to a transport role once the war in Europe was ended. 158 Squadron adopted the coding 'DK' when it re-armed with Stirling Vs, eg PJ889-DK: B, at Lissett in August 1945. It disbanded at the end of that year.

DL 91 Squadron (c)

The letters DL were carried by No 421 Flight, which was principally a Spitfire reconnaissance Flight within Fighter Command. It arose from a detached Flight of 66 Squadron initially equipped with six Spitfire IIs. On October 12 1940 its establishment changed to ten Hurricane IIs and two Spitfire IIs, the unit claiming to be the first to be equipped with Hurricane IIs, eg DL: H-Z2312. It was now known as 421 Recce Flight. It became 91 Squadron at Hawkinge on January 11 1941 and flew Spitfire IIAs like DL: M-P7970. Soon after it re-armed with Spitfire VBs, eg DL: O-AR387 and DL: U-EN771. In April 1943 Spitfire XIIs began to replace the Vs but no tie-ups between codes and serials, eg EN623, MB830 seem ever to have been recorded. In March 1944 the squadron became the first to equip with Spitfire XIVs, eg DL: T-RB174. To permit an offensive role it re-equipped with Spitfire IXBs in the summer of 1944, eg PL266, PL271. In March 1945 it re-armed with Spitfire XXIs, eg DL: U-LA279, which were retained until about October 1946 when it re-armed with Meteor IIIs, eg DL: F-EE409. It was renumbered 92 Squadron on January 31 1947.

Continued on page 44



ATTACK!

U.S. M36 "JACKSON". First produced in 1943 on the M4 A3 (Sherman) chassis with a 90mm gun, designed to knock out the heavy Panthers and Tigers at long range. In N.W. Europe in late 1944, made an impressive performance with their max. speed of 30 mph. Kit: Motorised, finely detailed with combat crew of 3 with small arms. Plastic track and accurate decals. A welcome addition to Tamiya's 1/35 scale range. Price **£1.99**.

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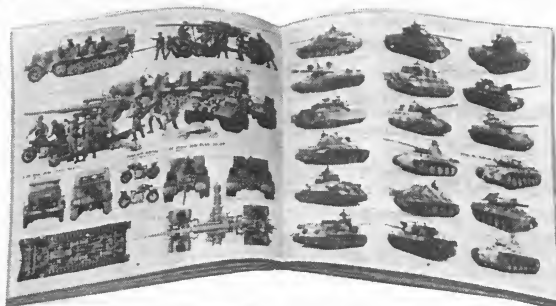


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NEW

DL 92 Squadron (c)
91 Squadron was re-numbered 92 Squadron at Duxford on January 31 1947. It retained its coding into 1951 when squadron colours were adopted. Examples of aircraft: Meteor III DL:C-EE388 and Mk IV DL:R-VT286.

DM 248 Squadron (c)
248 Squadron re-formed at Hendon on October 30 1939, as a Blenheim fighter squadron. It was at this time coded WR. On June 20 1940 it was transferred to Coastal Command and retained the WR coding which was subsequently used on its Beaufighters. When it re-armed with Mosquitoes in October 1943, the codes changed to DM, these being retained until disbandment on September 30 1946. Mosquito VI RS610 was DM:Y from April to June 1945.

DN 416 Squadron (c)
A Canadian Spitfire squadron formed November 18 1941 and disbanded March 19 1946. Example: DN:U-BS411.

DN Unknown
Dakotas are known to have carried this coding. eg DN:Y-KN512. Unit not known.

DO Unknown
No unit allocation for these letters has ever come to light. They were of course used on Spitfires for the film *The Battle of Britain*.

DP 193 Squadron (c)
This was a Typhoon squadron formed December 18 1942 and disbanded August 31 1945. Example used: DP:E-MN886.

DP Unknown
These letters are said to have been carried on Blenheim IVs at Mount Farm — they were certainly being worn by Blenheims in Britain 1941-42.

DQ 228 Squadron (c)
Used on Sunderlands from September 1939 until at least September 1942. Example: DQ:S-W4016.

DQ 1402 (Met) Flight (c)
Allocation confirmed, but no details of use are known. A Master II DL414:DQ-R was seen mid-1943, unit not known.

DQ 495 Ftr Group, USAAF (c)
Carried on P-38s, later P-47s, of 551st Ftr Sqn December 1943 to May 1945.

DR 322 Bomb Group, USAAF (c)
Carried on B-26s of the Group March 1943 to late 1945.

DR 1555 Radar Approach Training Flight (c)
Used on Oxfords of the Flight 1945-46. eg DR:D-NJ285.

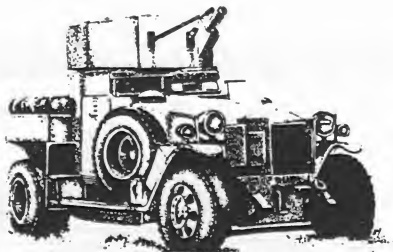
DR Unknown
In use on Hurricanes at Fairford in 1945, eg DR:U-PZ768.

DS 351st Bomb Group, USAAF (c)
Carried on B-17s of the 511th Bomb Sqn April 1943 - May 1945.

DS Station Flight, Llanbedr (c)
Allocation confirmed, use not known. □

Abbreviations

(c)=Confirmed.
(?)=Unconfirmed.



8th army in the desert

Part 3: infantry by John Sandars

THE INFANTRY FORMATIONS of the 8th Army, like the line and light infantry of earlier years, were of two distinct types. The majority were 'lorried' or heavy infantry, which made up the Infantry Divisions, and in some cases the Infantry Brigades in the Armoured Divisions. The light infantry were in the form of 'motor battalions', which were organised more on the lines of the German panzergrenadiers. These battalions formed an integral part of the Armoured Brigades within the Armoured Division. In some cases a complete brigade of motor infantry was used in place of lorried infantry to provide an Armoured Division's Infantry Brigade (the organisation of the Armoured Division will be dealt with next month).

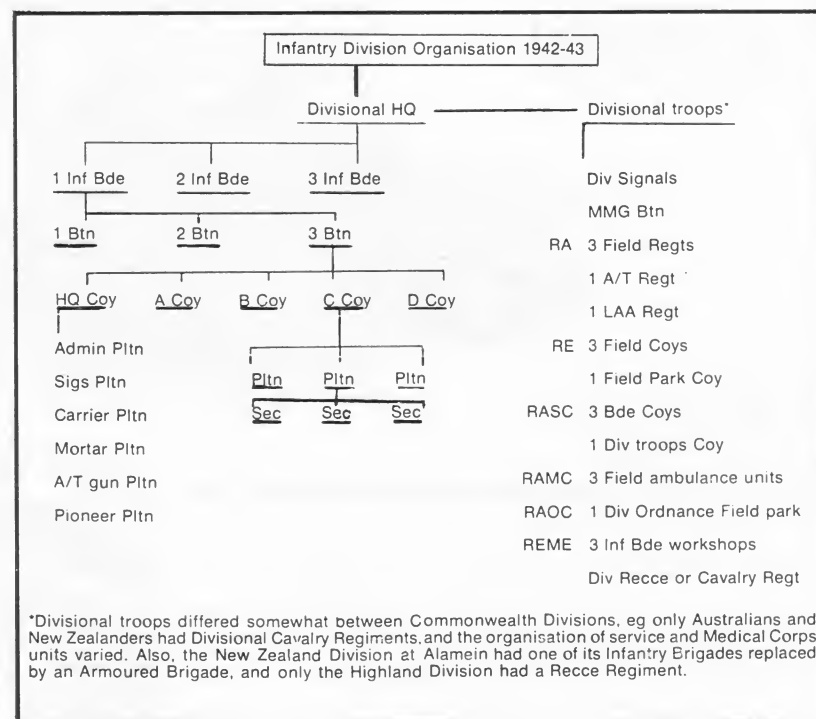
Lorried Infantry Divisions

The smallest unit was the section, commanded by a corporal and armed with eight rifles, one Bren LMG and one Thompson machine carbine (TMC). Three of these sections formed a platoon under a subaltern. The platoon HQ had a sergeant as 2i/c and about six men including a runner and the officer's batman. The HQ was equipped with a 2 inch mor-

tar for firing smoke and HE, and the cumbersome and practically ineffective Boy's anti-tank rifle. It seems probable that the Boy's was generally discarded by the time of Alamein, although its successor as a platoon A/T weapon, the PIAT, did not appear until mid-1943. The infantry platoon did not have its own transport as such, but was normally carried in a 3-ton lorry of the Divisional RASC units.

The next step up was the company, which consisted of three platoons under a captain or major, with a 2i/c and a sergeant-major to do the 'G' and 'AQ' work. Company HQ was normally linked to Battalion by wireless, with infantrymen as operators, but sets were not normally allocated to platoons except for special operations. The company CO would have a jeep or carrier for his own transport, and there was a company truck for stores and ammunition.

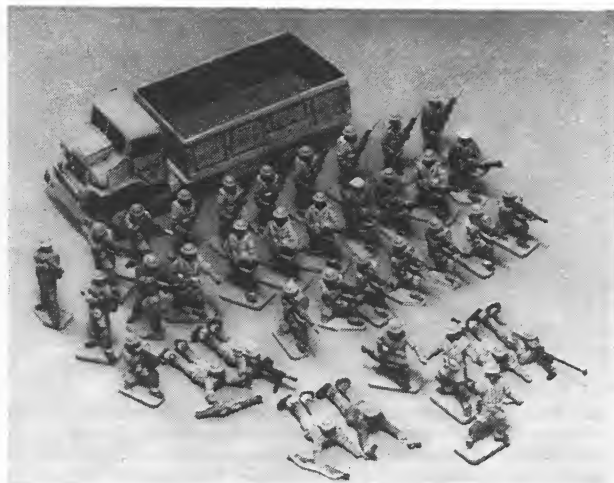
Four of these rifle companies were combined with a powerful HQ company to form a battalion, under a lieutenant colonel with a small staff headed by his adjutant and the RSM. The HQ company was really a support unit, and apart from the administrative and the signals pla-



toons, it was composed of fighting troops. The carrier platoon of 13 universal carriers, each with an LMG in addition to the platoon 2 inch mortar and A/T rifles, was a useful mobile reserve of firepower. The carriers were only designed as transport across fireswept ground, and their crews normally fought dismounted, but they were also a good method of moving up ammunition, wire and tools under fire to consolidate positions captured by the rifle companies.

Further fire support was provided by a platoon of six 3 inch mortars which were transported in their own carriers, and anti-tank defence was provided by a platoon of eight guns carried on 'portee' lorries. Both mortars and A/T guns were normally dismounted and dug in for firing. At the time of Alamein the 6 pdr A/T gun was in use, but some of the infantry A/T platoons were still equipped with the older 2 pdr. The last platoon in the HQ company consisted of some 20 pioneers whose job it was to lift mines, and clear wire and other obstacles.

Full-strength 1:76 scale lorried infantry platoon 1942-3, with Chevrolet troop-carrier. Figures are converted from the Airfix 8th Army set and the vehicle is scratch-built. Note 2-inch mortar and Boys rifle in platoon HQ, and Tommy guns and Bren LMGs at the left-hand end of each of the three sections.



Infantry weapons. Top 1:32 scale figures, mostly converted from Britain's plastic 'Swoppets' and armed, from left to right, with: Bren LMG, No 4 rifle, 2-inch mortar, Boys A/T rifle, No 1 rifle, Tommy gun, portable radio and pistol. **Bottom** simple Airfix 1:76 scale conversions including Highland officer and piper, sergeant major and stretcher bearer.



These were the men whose task most closely resembled that of the German engineer units.

Three battalions made up a Brigade under a brigadier, with a staff headed by the Brigade major, and three Brigades, along with various divisional troops, formed the Infantry Division. Most of the divisional troops were from other arms, which will be discussed in later articles, but they did include a medium machine-gun battalion with Vickers guns. This was usually split up with a company supporting each Brigade, and was sometimes further subdivided to allocate guns to battalions and companies.

Motor Battalions

Although they used the same basic weapons as the lorried infantry, the role, strength, and means of transport of the motor battalions were very different. Consisting largely of units from rifle regiments, their task was to support the tanks by holding on to captured ground to form pivots of manoeuvre, and to protect them when in leaguer for the night, rather than to assault defended positions with the bayonet. To achieve this the motor battalions consisted of small highly mobile units with good firepower, but few men.

The exact organisation was frequently changed, but in late 1942 seems to have consisted of an HQ with 3 inch mortar platoon, an anti-tank company of sixteen 6 pdr guns on portees, and three motor companies which each had a MMG platoon, a scout platoon of 11 carriers, and two motor platoons mounted on cross country 15 cwt trucks. Each truck carried a section of four or five men with an LMG and A/T rifle, and there were three sections and a HQ to each platoon.

Infantry dress

On the whole, although often pretty scruffy

Infantry HQ company weapons. Top 1:76 scale models — from left to right: Indian-pattern wheeled carrier and 3-inch mortar which it carried; 2 pdr anti-tank gun on portee and dismounted; and Universal carrier. Figures and Universal carrier are Airfix, weapons and other vehicles scratch-built. **Left** 1:32 scale scratch-built 2 pdr and Universal carrier with converted Airfix figures.



Above infantry in winter clothing: 1:32 scale figures converted from Airfix 8th Army and Commando sets. Rifles and equipment are of wood and thin cardboard, great-coats and jersey are from paper. Note respirators being carried, as they were early in the campaign. Top right machine-gunners with Vickers gun converted from Britain's 1:32 scale metal figures. Note leather jerkins worn under webbing. Right 1:76 scale machine-gun platoon with converted Airfix figures. Vickers guns are scratch-built from wood and pins, while the 15 cwt gun trucks and 8 cwt HQ truck are scratch-built on Minitanks chassis.



when in action, the infantry seem to have dressed more conventionally than their armoured counterparts. This was probably because their footwear had to be suitable for marching, their garments had to fit under webbing, and they had to conceal themselves as best they could in the open. They may also have had a rather less flamboyant approach to the problem than the cavalry.

The usual equipment worn in action consisted of steel helmet with chinstrap and either hessian or scrim net cover, rifle with sling, or other weapon, and webbing belt and braces which crossed at the back, to which were attached two ammunition pouches at the front, a bayonet scabbard on the left hip, and a water bottle on the right. Over this a small back pack was worn, and at the start of the campaign anti-gas respirators were carried on the chest, but by 1942 these had been abandoned. The water bottle was sometimes carried in the pack, and picks or shovels were sometimes tucked behind it. Extra rifle ammunition was carried in a cloth and tape bandolier.

Khaki drill shirts and shorts were worn in

summer, but some units wore long drill trousers. British shorts came down at least to the knee, although the Australians and South Africans favoured ones more like those on the Airfix 1:32 scale figures. In cool weather khaki jerseys, scarves and balaclava helmets were worn, and in winter full battledress with leather jerkins, and even greatcoats was used. The New Zealanders wore grey, instead of khaki shirts with their battledress, and the Australians had the pre-war tunic instead of the battledress blouse.

When not under fire, officers wore peaked caps, and most other ranks the folding side hat, as the beret was still restricted to armour and certain special units at that time. The Australians of course wore the familiar slouch hat, but the New Zealanders only seem to have worn their 'boy scout' type in the rear areas. South Africans favoured their small sun helmets, Indians various types of turban, and the Highlanders the bonnet.

Many units carried no identification on their dress, but the Highlanders tended to carry their divisional sign on their sleeves, as did the South

Africans, who also wore orange shoulder tapes. The New Zealanders wore black and white shoulder tapes and sometimes the Highlanders used white tape in a St Andrews cross on the back of their packs for identification in action at night. Rifle regiments had rank badges, buttons, and tapes of black as opposed to the brass and light coloured cloth of other units.

Non-Commonwealth infantry

At Alamein 13 Corps included a Greek Brigade and Free French troops, while a Polish Brigade Group had been part of the Tobruk garrison, and other nationalities including Czechs had fought in the Desert. With the possible exception of the French, these forces were armed, equipped, and organised in basically the same way as Commonwealth units. Some of the French retained their old equipment, and the Foreign Legion retained the white kepi as headgear, when not wearing the British tin hat.

Models available

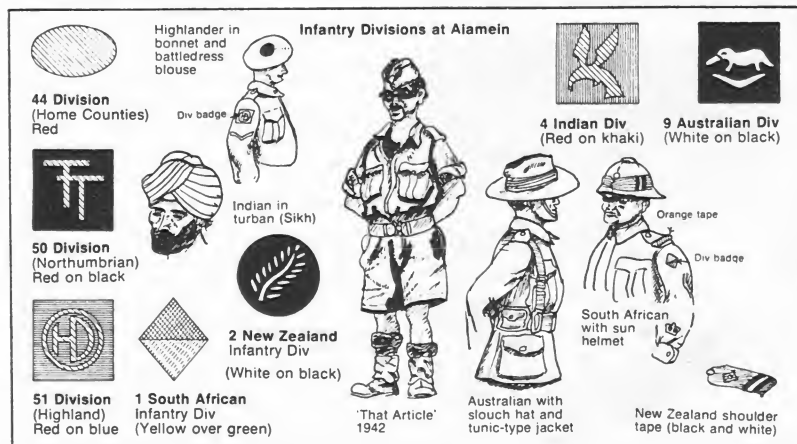
1:32 scale: Douglas Miniatures, metal rifleman in summer dress; Airfix 8th Army plastic set; Airfix Commandos, plastic, suitable to convert for 8th Army troops in winter dress.

1:76 scale: Airfix plastic set, summer dress; Almark plastic set, winter dress.

The flexibility given by the above plastic sets makes it possible to model any required infantry figure without excessive conversion. Humbrol paints are available in various stone and khaki shades. There is no need to be too fussy on exact colours as wartime dyes and material varied quite a lot. Webbing should be bleached almost white and boots well scuffed.

Information

(a) General background on infantry in the desert: *Infantry Brigadier*, by Kippenberger. Oxford Press (NZ Division). *Twenty thousand thieves*, Lambert. Corgi 1957 (Australian). *The diary of a Desert Rat*, Crimp. Leo Cooper 1971



Soldier News

By Chris McCarthy

AGAIN I WOULD like to thank everyone for the many letters that have been written to me concerning this series of articles. It has been especially nice to have letters from the United States, Canada, and Europe. As I have mentioned before, *Soldier News* will attempt to be an exchange mart for new ideas and new solutions to old problems.

Did you know that SOLDIERS hire goods to film, TV and advertising companies? You might have seen the BBC 2 programme 'China the Barbarians', with SOLDIERS' soldiers; the Good News Chocolate advert; Callan's wargame and also many record covers and book jackets most of which came from SOLDIERS. Why not plan some advertising or window displays using model soldiers from SOLDIERS, 36 Kennington Road, London SE1.

Richtofen's War is the very latest in the Avalon Hill games. This is an air war game of WWI selling at £6.25 plus 40p P&P. And of course their other recent addition The Wilderness Game is available for the same price.

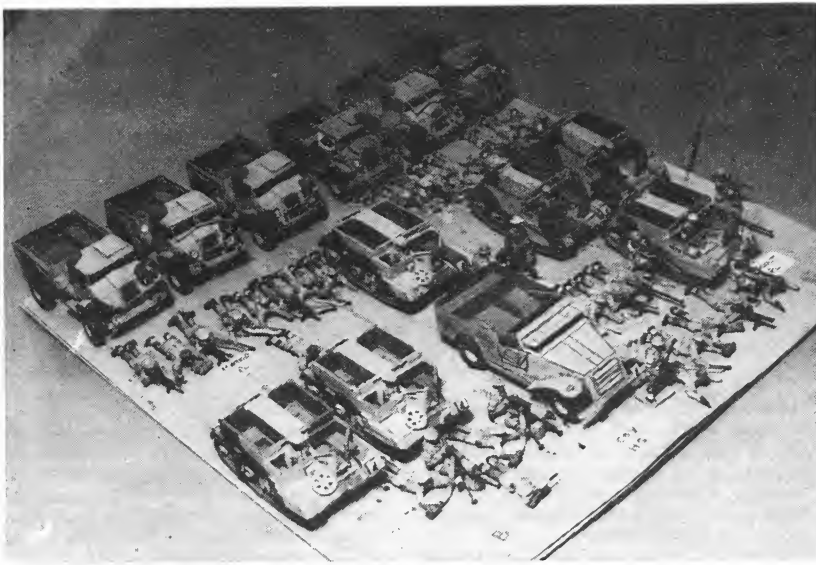
If you would like to re-stage Alamein or perhaps take on the Battle of the Kursk Salient, if you have ever wanted to engage in Divisional, Corps or Army sized battle-gaming, then Heroics 1:300 scale is the size figure you have been looking for. 1:300 scale has come alive with new free-standing individual men to increase the accuracy of your wargaming, because tanks alone, as you know, are not enough. Heroics 1:300 scale figures are just six millimetres high, yet as individual figures they have plenty of animation and liveliness. Heroics Campaign Figures also include tanks, artillery, prime movers and soft-skinned vehicles, enough to re-fight the desert campaigns of the Second World War. In addition, a wide range of ancients and ACW figures will soon be available.

SOLDIERS have just received a huge new selection of Frontier 54 mm figures. Prices for unpainted figures are from 90p to £4.00. Stop in and look over their selection.

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New books of interest include: *Military Uniforms, the Splendour of the Past* by R. Nicholson at £1.25 plus P&P 25p; *Waterloo Uniforms, No 1 British Cavalry* by John Mollo. A magnificent book in the usual tradition of Mr Mollo, this book contains many illustrations never before published and an excellent format of coloured schemae of dress regulations. A good buy at £4.80 plus 25p P&P.

Books, Books, and more Books at SOLDIERS, 36 Kennington Road, London SE1. Telephone 01-928 7479. □



1:76 scale wargames unit representing a motor infantry company. Numbers are scaled down, but HQ with White scout car (centre front), MG platoon with carriers (left front), two motor platoons with 15 cwt trucks (back), mortar section (middle right) and scout platoon with carriers (right front) are all included. Figures and carriers are Airfix, rest is scratch-built.

(Motor Battalion). *Alamein*, Lucas Philips. Heinemann 1962 (overall history).

(b) Weapons and equipment: *British and American infantry weapons*, Barker. Arms & Armour 1969. AFV Profile No 14, *Carriers*. Airfix Magazine, 1969 series, The carrier story; May 1969, Lee Enfield rifles. Pan Ballantine/Purnell, *History of WWII: Infantry weapons*, Barrage.

(c) Vehicles and markings: *Observer's Fighting Vehicle Directory*, Vanderveen. Warne.

Military Vehicle Markings Parts 1 and 2, Wise. Bellona.

(d) Badges and dress: *Regiments at a Glance*, Wilson. Blackie & Son. *Army badges and Insignia of WWII*, Rosignoli. Blandford. Illustrated histories of the war such as: Hutchinsons, Odhams, and Hammertons.

This list is needless to say not exhaustive, but may give some ideas for further study of the subject. Next month's article will be on the tank units of the 8th Army. □

Infantry equipment 1942-3, 1:32 scale: packs, pouches and water bottles are made of balsa with paper flaps and straps. Rifles are from hardwood with fusewire sling swivels, bayonets and scabbards are of cardboard, webbing is of paper and thin cardboard. Helmets are covered (left) with cloth from an old handkerchief, and (right) with thin nylon curtain netting.



Change of address

Will all readers please note that from September 1 the new address of *Airfix Magazine's* editorial offices will be: Bar Hill, Cambridge CB3 8EL. Tel: Crafts Hill 80010. The advertisement and circulation departments remain at their old addresses — see Contents page.



renaissance warfare

Part 4: The artillery

GUNS WERE ALREADY essential for siege warfare, and although they were slow-firing and very immobile they had also been successfully employed on the battlefield before the 16th Century, notably in the wagon-riding Czech armies of Jan Ziska, and by the French in the later stages of the 100 Years War. Early cannon were usually on static mountings, and a crane, for lifting, and wagons, for transport, remained essential parts of the artillery train well into the 16th Century (in 1527 the Emperor Maximilian still had six heavy guns like this, though his 105 lighter guns were all on wheeled carriages). Among the first guns on wheeled carriages were those used by the French in 1461, and those which the Swiss captured from Charles the Bold of Burgundy in the 1470s (and still hold).

Up to about the beginning of the 16th Cen-

tury gun barrels had no trunnions and had to be strapped to their carriages with iron bands, thus elevation had to be achieved by providing some way of tilting the carriage (including digging one end into the ground), and many early 16th Century guns were like this, though the introduction of cast-on trunnions produced a more modern type of carriage for some guns, the barrel being raised or lowered independently, usually by means of wedges inserted under the breech end with a handspike.

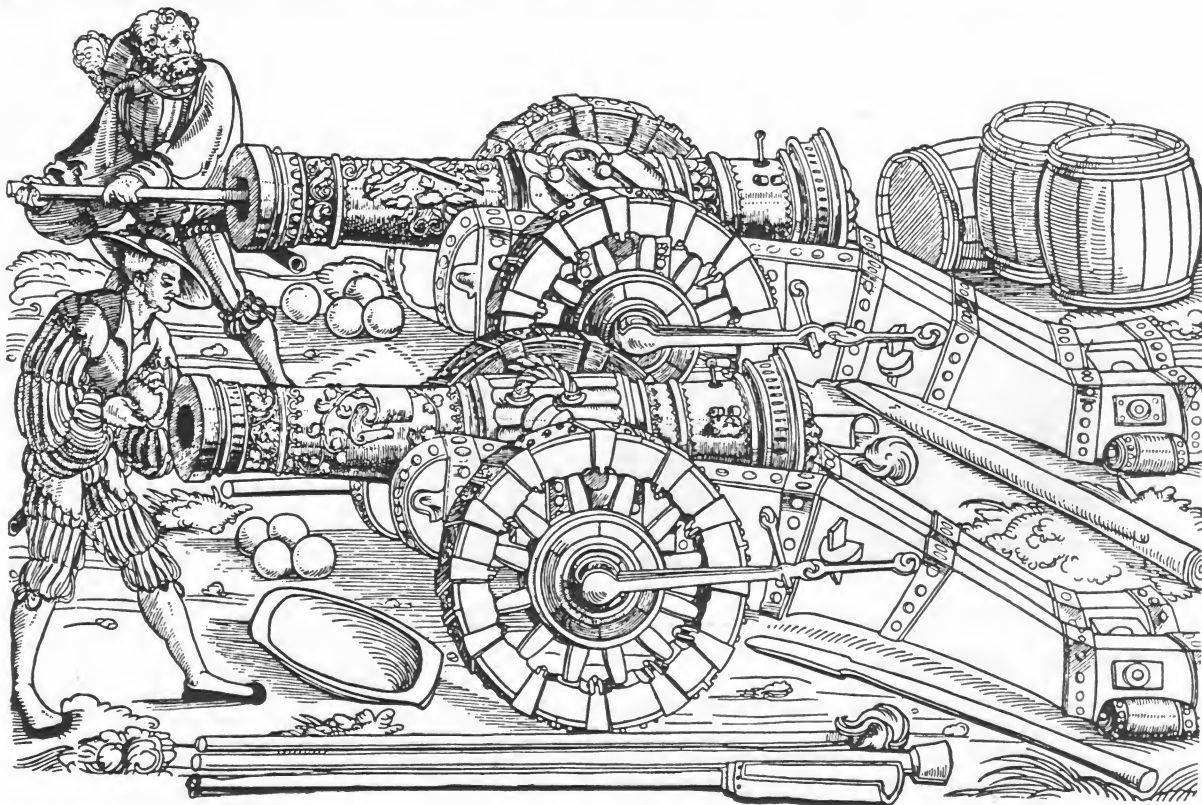
In the 15th Century many large guns were of built-up construction, with wrought-iron bars and rings welded together, and siege-guns of this type were still used in the early 16th Century — they were often breech-loaders with a separate chamber which had to be wedged at the rear of the barrel; however the great majority of the guns of this period were cast bronze

muzzle loaders (the bells of a captured city were often reserved to the master-gunner for their construction). By the 1540s cast iron guns were successfully produced in Sussex, and later were made in Sweden and Holland as well; they were only one-quarter the price of bronze guns, but were a lot heavier and were regarded with grave suspicion owing to their habit of bursting without warning (if a bronze gun did burst, it usually showed a tell-tale bulge first).

The first fully mobile and effective field artillery appeared in 1494 in the train of Charles VIII of France when he invaded Italy, and Fornovo (1495) was probably the first battle where artillery played a really effective part. The eight-foot bronze guns were drawn by horse teams and could keep up with marching infantry. They made a great impression on the Italians whose few heavy pieces, being ox-drawn, usually arrived too late for battles and, according to Machiavelli, could never fire more than one or two shots before battle was joined. The Spanish defeat at Ravenna (1512) was largely due to the French train of 30 guns, plus another 24 belonging to their ally the Duke of Ferrara, and the Spanish themselves on this occasion fielded 20 pieces.

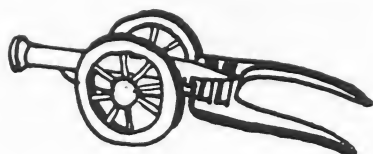
There was a great variety of guns in use (Henry VIII used no less than 11 different calibres at his siege of Boulogne), and an even greater variety of names very imprecisely applied to them by writers of the time, but a number of basic types can be distinguished by the mid-16th Century. The cannon was a

German 16th Century field guns with gunners' implements. Note lavish decoration on barrels! From a woodcut by Erhardt Schoen (1514-1550).





Above left a 17th Century field gun and crew. Gun by Hinchliffe, figures by Warrior. Above right a 16th Century light field gun and crew, both from Warrior Figures.



A light field gun with shafts on carriage of the later 15th Century (sketch by author).

wide-bore, short gun (Sir James Turner in *Pallas Armata* said cannon were 'not above 18 or 19 diameters of their bores in length') intended for smashing down walls at a range, preferably, of only 200 yards or so; culverins were longer, higher velocity weapons of longer range, and most field guns fell into this category; mortars and perriers were short-barrelled high-trajectory weapons, mainly for siege work; and there were also various 'Ribauld-quins', organ-guns, 'shrimps', 'carts of war' and so on; basically these last were multiple guns mounted on a common carriage, sometimes with some form of protection for the crew; shrimps were really siege weapons with a couple of light guns, organ guns could have as many as 36 barrels and were a sort of forerunner of the machine gun, while several variations on the light-cart-with-heavy arquebusses theme around the mid-16th Century seem to have been intended more as light artillery for the close support of infantry. Multiple guns were used as late as the English Civil War, 'two barricades drawn on wheels, in each seven small brass and leathern guns charged with case shot' being captured by the Royalists in 1644.

There were attempts at standardisation during the 16th Century, the earliest being by Charles V, who in 1544 ordered the following to be the standard types in Imperial and Spanish armies:

- 40 pounder Cannon
- 24 pounder Cannon Moyane
- 12 pounder Culverin
(2 types of different lengths)
- 6 pounder Culverin
(2 types of different lengths)
- 3 pounder Falcon

In 1550, Henri II instituted the famous 'Six Calibres of France', of which some details are given as follows:

33 pounder Cannon; 10 ft 6 in long; team 21 horses. 15 pounder Culverin; 11 ft long; team 17. 7 pounder Bastard Culverin; 11 ft; team 11. 2 pounder Culverin Moyane; 8 ft 6 in; team 4. 1 pounder Falcon; 7 ft 6 in long; team 3. ¾ pounder Falconet; 7 ft long; team 2.

Later efforts in this direction were probably rather more successful — Maurice of Nassau reduced the guns of the Dutch army to four types at the end of the century (48, 24, 12 and 6 pounders), and Gustavus Adolphus limited the Swedish Artillery to 24, 12 and 6 pounders, plus infantry guns which were 3 or 4 pounders.

Some general information on guns of the time is summarised in the table.

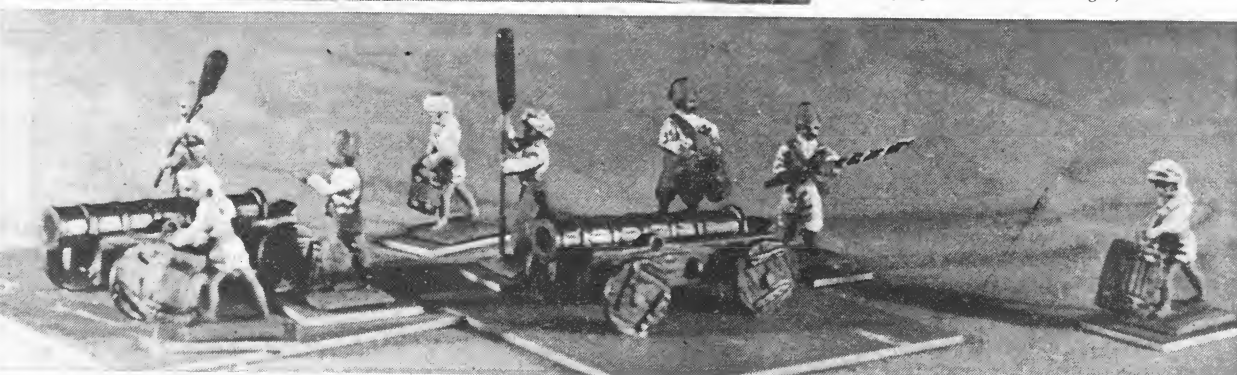
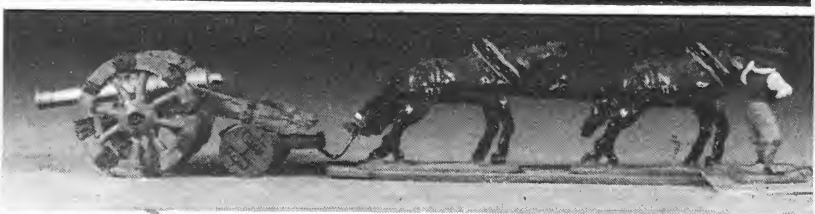
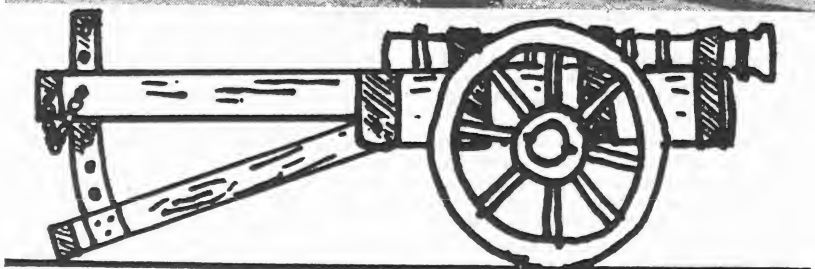
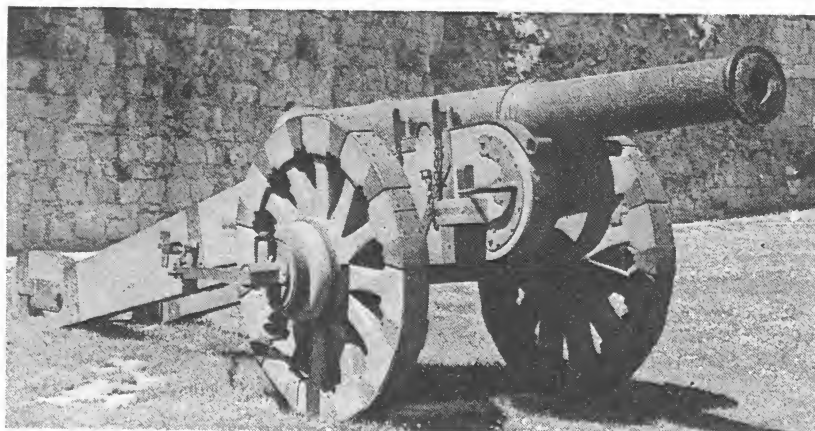
Even on wheeled carriages, the guns of the period had very limited mobility, only partly because of the dreadful roads; a Scottish 'Great Culverin' of 1513 required no less than 36 oxen, and English Culverins of the Civil War needed

nine horses. 16th Century wheeled guns were sometimes dragged barrel-first, with the trail *literally* trailing. Otherwise a pair of shafts was normally attached to the trail and the strongest horse harnessed between them, the other horses or oxen being harnessed ahead of it on traces, either in pairs or in tandem. The limber, in the form of a pair of wheels pivoted beneath the trail of a gun, came into use in the 16th Century, in the Spanish and Imperial forces (and, under Maurice of Nassau, in Holland) at least, but doesn't seem to have been used everywhere; certainly it hadn't spread to England by the time of the Civil War.

Ammunition for immediate use was sometimes carried in a pentroofed chest on the gun trail by the late 16th Century, but separate ammunition carts were more usual. Drivers and teams tended to be temporarily hired civilians of limited enthusiasm, except in the

Table of Ordnance

Piece	Weight lb	Shot lb	Bore in	Length ft	Ranges		
					Point Blank yds	At 10° yds	Maximum yds
CULVERIN TYPE							
Esmeril, rabinet	200	0.3	1.0	2.5	200		750
Robinet	200	1	1.25	—	200		—
Serpentine	250-400	0.5	1.5	3.0	250		1,000
Falconet	500	1-2	2.0	3.7-6	280		1,500
Bombard (1512)	600	—	3.5	9.0	—		—
Falcon	800	3.0	2.5	6-7	320-400	1,920	2,500
Minion, DemiSaker	1,000-1,100	4.5-6	3-3.3	6.5-8	450		3,500
Passe Volant (also name of smaller gun)	3,000	6.0	3.3	10.0	—		4,500
Saker	1,500-1,600	5.5-9	3.25-4	7.0	360-500	2,170	4,000
Culverin Bastard	2,299-3,000	12	4.6	8.5	600		4,000
Demiculverin	3,000-3,400	10	4.2-4.5	8.5	400-850	2,400	5,000
Culverin	4,000-4,800	15-19	5.2-5.5	11.0	460 - 2,000	4,000	6,700
Culverin Royal	7,000	32	6.5	16.0			7,000
CANNON TYPE							
Quarter Cannon	2,000	12	4.6	7.0	400		2,000
Demicannon	4,000	24-36	6-6.5	11.0	450		2,500
Bastard or Spurious Cannon	4,500	42	7.0	10.0	400		2,000
Cannon Serpentine	6,000	42	7.0	12.0	500		3,000
Cannon	7,000	50	8.0	13.0	600		3,500
Cannon Royal, Curtowe	8,000	60	8.5	8.5-12.0	750		4,000
Double Courtant	7,300	80	11.0	—	—		—
Basilisk	12,000	90	10.0	10.0	750		4,000
MORTARS Etc							
Cannon Perier	3,000	24.5	—	—	—		1,600
Pedrero (medium)	3,000	30	10	9.0	500		2,500
Mortar (medium)	1,500	30	6.3	2.0	300		750
Mortar (heavy)	10,000	200	15.0	6.0	1,000		2,000



Turkish army, which already had a regular drivers' corps, the 'Top Arabacis', 3,000 strong. These Turks walked beside their teams, perhaps because the Turks favoured heavy and rather immobile guns which were probably mostly ox-drawn, but 16th Century European drivers are often depicted riding the left-hand horses of their teams. Very light guns sometimes had a trail consisting of two shafts — a 15th Century example is shown — and similar carriages were in use up to the end of the 17th Century.

Organisation

Normally, all the artillery of an army would form a single Train under a Master-General of the Ordnance (Topji-Pasha in the case of the Turks) who would also be responsible for deploying them in battle. The first separate artillery units I have come across were the regiments formed in the Swedish artillery by Lennart Torstensson, Gustavus Adolphus' 27-year-old artilleryist; each had six Companies, four of gunners, one of engineers and one of pioneers. In the English Civil War a demi-cannon (about the heaviest piece ever used in the field) had a crew of three gunners and six matrosses (gunners' mates); a culverin two gunners and four matrosses, lighter guns down to three men. A Royalist Artillery Train had 275 carters, 200 pioneers and 44 'conductors' to 69 gunners and 88 matrosses; these would probably be fairly average proportions.

The Turks liked to mass their guns in line, often chained together and sometimes placed in reserve behind a line of cavalry to engage any enemy breaking through; tactics which proved very successful against the Persians at Chaldiran (1514) and the Hungarians at Mohacs (1526).

Among European armies guns would probably be placed to the rear of an army if suitable

Top left a culverin of 1588 on replica carriage, preserved at Pevensey Castle, Sussex. **Second from top** sketch showing elevating carriage for gun without trunnions, late 15th Century. **Third** 17th Century Saker with early type of limber (Miniature Figurines gun and limber). **Left** Turkish 16th Century siege guns (Miniature Figurines). **Below** Turkish heavy guns of the early 16th Century (Miniature Figurines guns with gunners converted from Egyptian Campaign and Colonial ranges).

high ground was available, often scattered at 50 or 100 yard intervals. Concentration of guns to fire on a decisive point was unusual, probably because only the lightest had any tactical mobility, the rest having to stop in their pre-battle positions; however it did sometimes happen — for example at Cheriton in the English Civil War where the Royalists concentrated their guns to support their attack on Cheriton Wood.

Most often, throughout the period, guns were drawn up *in front* of the army, which seems to imply that they were expected to play their main role before the armies moved to join battle. Very light, mobile guns which could accompany advancing infantry appeared by the 17th Century; they are usually attributed to Gustavus Adolphus, but I think that some of the very light guns employed earlier must have been used in a similar way. Other armies, including the Roundheads and the Scots Covenanters, followed the Swedes in attaching such weapons to infantry units.

A very effective tactic in the early 16th Century, used by the French in Italy and also by the Teutonic Knights, was to stop and pin enemy forces by a series of controlled cavalry charges, so that artillery fire could destroy them.

Effectiveness

Artillery was decisive in some battles, such as Marignano (1515) and Pinkie (1547) and was always useful except in very difficult terrain such as that of Ulster, and nearly all European and Middle Eastern armies of the period employed as much as they could afford. Accuracy was very limited over about 300 yards (¼ inch 'windage' was allowed between shot and bore) and rates of fire were not high, probably because guns were loaded with shovelfuls of loose powder from a barrel (usually closed with a leather cover with a drawstring). Cartridges, though known, were not apparently used much until the advent of Gustavus's regimental guns, which, using them, achieved rates of fire of up to three rounds a minute — faster than a musket. William Eldred, in *The Gunners' Glasse* (1646) gave eight rounds per hour as the average, though other evidence seems to show that quite large 17th Century guns such as culverins could manage ten rounds an hour; 'Drakes' (guns under 5 pounders) of the same period achieved 15 rph. For safety, a gun was supposed to fire only a limited number of shots per day, or at least before having a cooling-down period (for example, a 20 pounder culverin of Henry VIII was limited to 36 rounds a day). The usual missile was an iron cannon ball, though enormous stone shot were still favoured by the Turks; case-shot (lead balls in a canister) is first recorded from 1410, and was used at close range against attacking troops, especially by light and multiple guns; chain shot was used in special circumstance (for example to sweep troops off a breach) and mortars already used explosive shells, though this could be a highly dangerous business.

The very deep infantry formations common in the 16th Century probably made very good targets for artillery, cannon balls ploughing through several ranks at a time, and another useful effect was the frequent 'stinging' of not over-disciplined troops into disastrous attacks by steady artillery fire. Field fortifications, and lying down, were employed to counteract artillery fire. □

NEW kits and models

Bandai: 1:48 AFVs

IT WOULD SEEM that Japanese kit manufacturers make their own rules when it comes to kit scales. First to break the normal rules was Tamiya with their 1:35 models. Hasegawa have recently weighed in with 1:72 AFVs and now Bandai have come up with a range of 1:48 vehicles. Despite the odd scale this will be a series that cannot fail to catch on for the first samples are excellent. Our first review kits are for the Wespe and SdKfz 251. The former is a vehicle that is not available in any other scale and is a most welcome addition to the range of German AFV models.

Both kits are well detailed, well finished and accurate. All parts fit together nicely, but the kits are designed to be static only with no moving parts (except the guns) or rotating suspension. As an extra, both models feature internal engine and transmission detail which many will find rather a waste as most modellers will probably want to cement the top and bottom hull halves together. However, this feature, which is common to every vehicle in the range (the tanks include full fighting compartment detail) considerably simplifies the task of the diorama builder wishing to portray a workshop scene or 'knocked out' vehicle.

Assembly is straightforward and adequately explained, but care must be taken in assembling the Wespe's gun. The decals are well produced and offer a choice of markings. One thing we particularly liked are the small extras. Both kits include extra tools and jerricans and the 251 even has separately moulded coils of cable. Each kit has three crew figures complete with side arms.

Overall, we find it difficult to fault these kits,

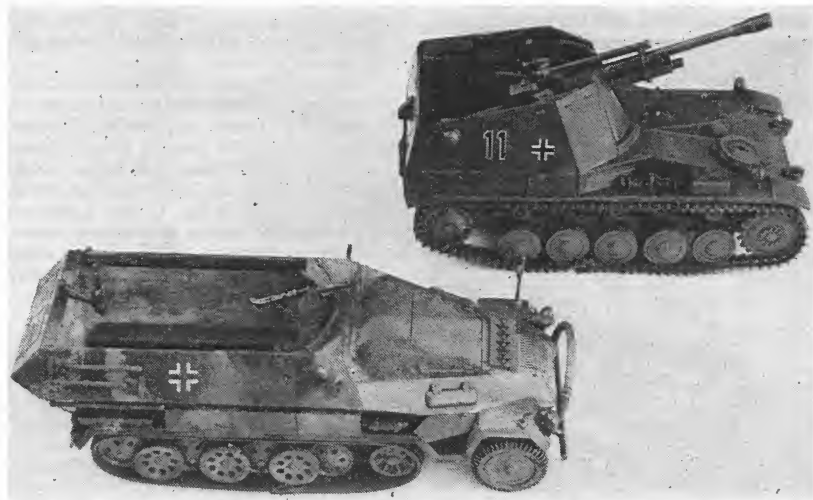
with the possible reservation on the choice of scale. But this reservation will not be shared by those who have little display space but wish to indulge in more detailed modelling than is possible in 1:76 scale. Wargamers may well find this scale is useful for gaming at platoon level, but this may be restricted by the limited range of suitable figures available at present. The same may not be said for AFVs. Already in the shops are a Tiger, Maultier, Kubelwagen, Schwimmwagen, BMW R75 (which is superior to the Tamiya offering despite the smaller scale) and PzKpfw IV, all by Bandai and in the same scale and range. Promised are a 8.8 cm Flak 18 and a 8-wheeled armoured car — type not specified. The complete range is available from Seagull Models, 15 Exhibition Road, London SW7.

Modeldecals: decals

A POINT THAT is sometimes overlooked when specialist transfer sheets are produced is that modifications to the basic kit are usually required. This criticism cannot be levelled at these latest sheets from Modeldecals. Dick Ward has done a spanking job of them, almost producing a conversion kit rather than just a new set of markings. Set 21, designed around the Hasegawa kit of the A-4F details two A-4E's, one of VMA-311's aircraft, this being the USMC machine, and one of VA-94's aircraft. The other Skyhawk is an A-4F of VA-164, 'Lady Jessie', and is for my money the best of the three. The AD-4 is of VA-65 and is the odd man out being depicted as in 1954/55, the A-4s being fairly current combat aircraft.

There is a wealth of detail information on the instruction sheets, and photographs are provided showing the aircraft depicted.

Set 22 provides for five aircraft, a very early



* F-86A-5 Sabre noteworthy as being one of the first Sabres here in Britain. The sheet shows the changes necessary to alter the Hasegawa F-86F to the F-86A. The T-33A is shown at a later date, being from USAF at Hahn AFB in Germany, and belonging to 50th TFW, in 1962, and these are amongst the more colourful markings for the type. Highlight of this set is the three alternatives given for the Airfix A-7D/E, and are bang up to date USAF schemes. Aircraft of the 356th TFS/354th TFW 40th TFS/355th TFW and 357th TFS also of the 355th TFW are depicted, the last being an alternative to the 40th TFS scheme. These markings are a refreshing change from the distinctly Navy flavour of the A-7 series as depicted by kit manufacturers to date. Among the many changes to the airframe of the A-7 shown on the instructions, is the revised flight refuelling arrangements of the Air Force machines. These use the Boeing 'Flying Boom' system, whereas the Navy and Marines favour the 'probe and drogue' buddy-pack installation.

These Modeldecals are well up to their previous standard, and are available at 38p each from Modeltoys, 246 Kingston Road, Portsmouth, Hants.

Hales and Hasegawa

ROVEX INDUSTRIES, who have been marketing the Japanese Hasegawa kits under the Frog label in Europe, have given up their import licence agreement although we understand that they will still be exporting to Japan on their side of the two-way exchange. The reason given is that in addition to the revaluation of the Yen the Japanese themselves have increased the price of the basic kit for export resulting in an overall price rise of 40 per cent by the time the model reaches the enthusiast in this country.

Although Frog will no longer be the source of Hasegawa's superb moulding, the Japanese kits will still be available. Another importer, A. A. Hales Ltd of Hinckley, Leicestershire, have taken over the licence and now the kits are available in their original Japanese home-market boxes with a Hales trade mark added.

Two of the now standard lines were sent to us recently, a BAC Lightning F Mk 6 and a Hawker Siddeley Harrier. Both kits are in 1:72 scale and although several years old are still superb models which earn the highest praise.



We built both a second time and found a lot of pleasure in the exercise. All component parts fit well and there's no problem with raised rivet sizes and difficult panel lines. Accuracy (certainly in the case of the Lightning) is first class and both kits can be readily converted into the two-seat trainer versions. An Airframe conversion kit for the T Mk 2 version of the Harrier has already been reviewed in *Airfix Magazine*.

These two models were amongst the first to be imported into the UK and the standards, even several years later, have not been bettered. Both are accurate and the parts fit well. The Lightning will need weight in the nose before fixing the two fuselage halves together.

Both kits are endowed with many extras. These include in the case of the Lightning, a pair of overwing ferry tanks and in that of the Harrier a varied assortment of SNEB rocket pods, bombs or long range fuel tanks.

Most model shops deal with Hales so there should be no problem in getting kits from your usual retailer. The prices are 50p each.

Laing: 15 mm figures

WE HAVE RECENTLY received a number of the 15 mm scale wargames figures designed by Peter Laing from W. J. Bowyer, 89 Kents Hill Road, Benfleet SS7 5PP. This range, which started the current boom in 15 mm scale, now includes Ancients, English Civil War, Feudal, Marlburian and American War of Independence figures.

Moulded in correct anatomical proportions, which gives some of the figures a rather 'spindly' appearance in comparison with the Miniature Figurines range, the figures are to true 15 mm scale and incorporate a surprising amount of detail, although casting of some figures is a little crude. When painted and assembled *en masse*, however, the overall effect is very pleasing.

One criticism we have is that figures armed with pikes are supplied with pins which must be cut and epoxied in place. Not only do these look rather unrealistic, but they are also dangerous! It is very easy to spike your finger while moving a regiment. Considering that the figures armed with halberds, linestocks etc are provided with moulded weapons of considerable fineness, it is a shame the pikes cannot be treated in the same way. An alternative to the pins would be to use 10 amp fuse wire, which would look more realistic and also be less painful!

This criticism aside, the figures are excellent quality, especially some of the 'special' groups such as war elephants and chariots. They are, however, twice the price of Minifig figures, costing 4p per foot figure and 8p per cavalry figure compared with 10p for five foot or three horse. A number of the 'special' figures will undoubtedly be popular nevertheless, such as the powder cart, pioneers, gunner with wheelbarrow and others. A full list is available from W. J. Bowyer at the above address.

Revell: 1:32 scale Hien

KAWASAKI'S INTRIGUING KI-61 Hien has been available for some time as a 1:72 scale kit from Revell. Now the Hien has a 'big brother' in Revell's 1:32 scale range with the release of a large Hien kit which seems to be another product of Revell's Japanese branch. Packaging and instruction sheet are in Revell's usual



Some of the Peter Laing 15 mm figures. Top to bottom war elephant, chariot, mangonel and crew, and Marlburian caisson with two gunners.

Western style, but the boxtop painting is by an Oriental gentleman and the kit itself has the 'feel' of a Japanese moulding.

When Allied pilots first met the Ki-61 they took it to be a licence-built version of the Bf 109, which it resembled. Well armed and well protected, the Ki-61 was a worthy opponent, but its in-line engine — which set it apart from its contemporaries — was difficult to maintain in the field.

In our opinion the Hien is the best 1:32 scale kit Revell have issued since the Raiden. Rivet detail is again sunken, as it was on the company's 1:72 Toryu, wheel wells are nicely detailed, and it is worth taking extra trouble to highlight the very good cockpit detail, particularly if the rather stiff and formal pilot figure is discarded. The kit successfully reproduces all the characteristics of the real aircraft and fit of parts is excellent. The ventral radiator assem-

Continued on page 54

MODELBOYS

PLASTIC KIT SPECIALISTS—ASSOCIATE MEMBER I.P.M.S.

MODELDECAL DECALS 1/72

Modeldecals sets Nos. 1, 2, 3, 7 and 10, are again all available as listed opposite. The accompanying instruction sheets for Nos. 1, 2 and 3 now all include a selection of photographs as appropriate, on the reverse side. The decal sheet for No. 2, now contains instrument panels for each machine. 'MODELDECAL' style fully illustrated instruction sheet, giving decal locations and full colour scheme details, is included with all Modeldecals, and commencing with set No. 17, a selection of photographs is also included.

PRICES		
SET No. 6	28p	Postage on all decals:
ALL OTHER SETS	38p	up to 3 sheets 6p, 4 and over 10p UK.

OVERSEAS TRADERS. These superb decals are already stocked by traders in many countries, immediate supplies with full terms. Details on request.

Please note that prices given in this advert. already include V.A.T.

MATCHBOX		
Hawker Fury Biplane	1/72	23p
Cessna P-12E Biplane	1/72	23p
S. Spitfire Mk. IX	1/72	23p
W. Lusander	1/72	23p
BAC Strikemaster	1/72	23p
A6M2 Zero	1/72	23p
F.W. 190A	1/72	23p
G. Gladiator	1/72	23p
Dornier Alpha Jet	1/72	23p
AH-IG Huey-Cobra	1/72	23p

HASE 3 AWA A/C		
Lockheed T-33A	1/72	32p
Curtiss CO C-3 Seagull	1/72	32p
N.A. F-86F Sabre	1/72	32p
Heinkel HE-51A-1	1/72	32p
F-5A Freedom Fighter	1/72	32p
T38A (F-5B) Talon	1/72	35p
A6M2 Zero	1/72	35p
A6M3 Mod. 22 Zero	1/72	35p
A6M3 Mod. 32 Zero	1/72	35p
A6M5c Zero	1/72	35p
Heinkel HE.51B-2	1/72	50p
C. Seagull Floatplane	1/72	50p
Cessna A-37A	1/72	50p
Aichi E 13A "Jake"	1/72	50p
Bell UH-1D Iroquois	1/72	50p
MIG-17E/D "Fresco"	1/72	50p
Fuji T-1A Trainer	1/72	60p
Type 94-1 "Ait"	1/72	75p
G.A6A Intruder	1/72	90p
F-4E Phantom	1/72	90p
F-106A Delta Dart	1/72	£1.10
F-102A Delta Dagger	1/72	£1.10
L. Neptune P2V-7	1/72	£1.50
G4M1 "Betty" and OHKA Mk. II Bomb	1/72	£1.55
G8N1 "Rita"	1/72	£2.23
Emily Flying Boat	1/72	£3.00
Boring B-47E	1/72	£3.00
H6K5 Mavis Flying Boat	1/72	£3.00
Shinmeiwa PS-1 or SS-2	1/72	£3.75
SP-5B Marlin	1/72	£3.75
Curtiss BF2C-1	1/72	£1.35
Boeing P-12E	1/72	£1.35
Boeing F4B-4	1/72	£1.35
A6M2 Zero	1/72	£1.35
ME.BF109E	1/72	£1.75
ME.262	1/72	£1.75
G.6F6F-3/5 Hellcat	1/72	£2.35
F-86F Sabre	1/72	£2.95

HELLER		
Curtiss P-40E	1/72	28p
Me. Bi 109F	1/72	28p
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Les Mureaux 117	1/72	28p
Morane Saulnier 406	1/72	28p
Devoiting D-520	1/72	28p
Bloch 152	1/72	28p
Amiot 174	1/72	28p
Breguet 693	1/72	28p
Potex 63-11	1/72	28p
Potex 631	1/72	28p
Potex 540	1/72	28p
Liore et Olivier 45	1/72	28p
Leo 451	1/72	28p
JU-87B	1/72	28p
Mig-19 "Farmer"	1/72	28p
Mig-21C "Fishbed"	1/72	28p

FROG		
F. Barracuda II	1/72	24p
F. Firefly Mk. I	1/72	24p
G. Avenger Mk. II, TBF. I	1/72	30p
ME 262A	1/72	30p
F. Gannet AS4	1/72	30p
P-38J/L Lightning	1/72	30p
Westland Wyvern	1/72	30p
JU-87G	1/72	30p
D.H. Hornet	1/72	30p
Meteor IV	1/72	30p
Me 110G	1/72	39p
F-104G Starfighter	1/72	39p
Ju-88A-4	1/72	39p
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Beaufort	1/72	39p
H.S. Buccaneer S.2	1/72	54p
H.S. Harrier Mk. I	1/72	54p
A4-H/K Skyhawk	1/72	54p
F-100D Super Sabre	1/72	54p
F-4K/M Phantom	1/72	54p
BAC Lightning 6	1/72	54p
F-105D Thunderchief	1/72	54p
RF-101C Voodoo	1/72	70p
Heinkel HE-111H/6	1/72	80p
A. VV. Whitley V/VII	1/72	£1.20
MR.3 Shackleton	1/72	£1.30
P2V-7 Neptune	1/72	£1.50

ITALAEREI

Reggiane RE-2000	1/72	59p
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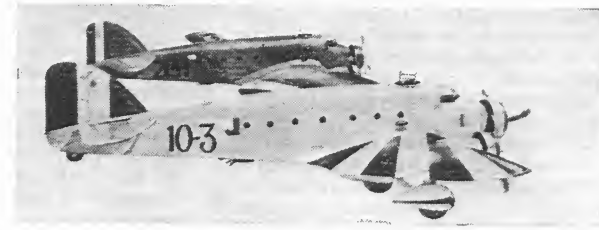
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Continued from page 52

bly is extremely good, consisting of two radiator fairings, shutters, radiator grille and a radiator duct door, which can be opened and closed smoothly if care is taken in assembly.

Undercarriage assembly might cause some problems because it consists of a number of doors, actuators and struts, and it is advisable to consult the boxtop painting to make sure you don't get the entire unit back to front. In our review sample, too, it was necessary to file down the top of part 10, the instrument bulkhead; as supplied, this component was a tight fit and tended to force apart the forward fuselage halves when they were put together.

Painting notes throughout are keyed to Pactra colours, but most of the airframe shades are already covered in Humbrol's Japanese aircraft set. Colours for smaller parts like propeller blades and drop tanks, and the dark blue anti-dazzle panel ahead of the cockpit, must be determined by experimenting with various Humbrol colours.

Revell supply only one set of decals, and by now we would have thought they were following the example of Airfix, who include instrument panel decals for even the smallest 1:72 scale kits. Alas, Revell are not, but we have found the answer in those instrument panel sheets being sold by BMW Models.

Modakit: Cromwell

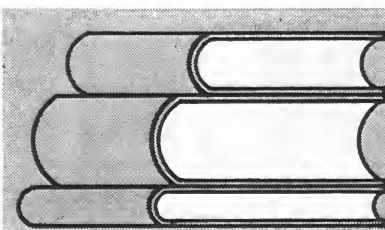
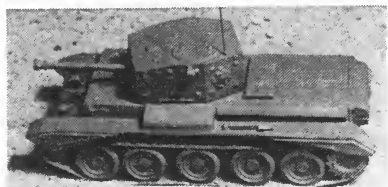
THE LATEST OF the now familiar Modakit kits is for two tanks, the Cromwell and the Centaur, on the same basic hull. Where the hull differs there are the alternative or additional parts to effect the change. We must stress again that these vacuum-formed kits are not for the novice although these are slightly simpler than some of those previously issued.

Most tedious and difficult parts are the road wheels, idlers and sprockets and to speed up construction Airfix Centurion road wheels and Crusader idlers and sprockets could be used as on our review models. These were mounted on Plastruct rod, which is in fact a wire coated with plastic, and this not only provided substantial 'axles' but added a bit of weight to the model. Track from the kit was used but it would be appreciated if extra lengths of 'teeth' could be provided as it is all too easy to cut these wrong.

The Cromwell version has been made up so far and this took a couple of evenings, including adding a bit of extra detail like shackles etc from stretched sprue and the painting — not a lot longer than it takes to make up a normal injection-moulded kit.

Headlights and the various guns were from the 'bits' box although different sizes of rod are included in the kit from which these parts can be fabricated.

Altogether a very nice kit with neatly moulded detail and parts that fit extremely well if cut out correctly. A full four view drawing of the Cromwell and additional views of the Centaur AA turret are included in the instructions.



books for modellers

Aviation

North American: an aircraft album, by Gordon Swanborough. Ian Allan Ltd, Terminal House, Shepperton, Middx. Price £2.75.

THIS LATEST in Ian Allan's aircraft album series is an excellent publication, although like the others it suffers from a shortage of text. The photographs, a number of which are printed to full page size (9" x 7") are well chosen, however, and the book is a good purchase for these alone, even though, inevitably, a number have appeared before.

The book begins with a description of the O-47 USAAC observation aircraft of 1935 and runs through to modern North-American light aircraft and the B-1 supersonic strategic bomber project which has replaced the ill-fated (and expensive!) B-70.

All the famous aircraft developed by North American are covered, including of course the Harvard, Mitchell, Mustang, Sabre and Super Sabre, Vigilante and the X-15 rocket plane, the fastest manned aircraft yet built (4,534 mph).

The book concludes with a listing of North American Charge Numbers complete with dates, designation, customers, works, descriptions, quantity built and constructor's numbers. The photographs provide a number of ideas for modellers and the book is well recommended to anyone with an interest in the many North American types.

The World's Airports, by John Stroud. Putnam World Aeronautical Library, 9 Bow Street, Covent Garden, London WC2. Price £1.70.

THE BUSTLE of a busy international airport has a great fascination even to people who are not specifically aircraft enthusiasts or modellers, and a fine day at Heathrow brings the sightseers out in their thousands. For anyone seeking a deeper background knowledge to the world's major airports and their operations, this inexpensive book makes an ideal introduction.

The first quarter of the book describes the historical evolution of the airport. This is followed by a chapter explaining how airports are designed and function, then the remainder of the book is devoted to descriptions and photographs of the world's major international airports. These are grouped by continents for the most part, although there are separate chapters for America, Britain and Russia. A final three chapters describe marine airports, heliports and STOL and high altitude airports, while a useful appendix lists facts and figures such as runway length, elevation, passengers and cargo carried for 23 major airports.

P-51 Mustang. Stem-Mucchi, Modena, Italy. Price L2.500.

JUST TO HAND for review is an Italian book on

the P-51 Mustang. Obviously to understand fully the contents of this book requires an intimate knowledge of the language but fortunately this is not necessary to appreciate the many interesting photographs of the Mustang in all its variants from prototype to 'k'. Colour plates showing the port side only of some sixteen representative aircraft will be of particular interest to modellers looking for alternative schemes to finish the Airfix 1:24 scale kit of the Mustang D. Appendices contain squadron details of USAAF and RAF units giving in most cases squadron codes and bases while a comprehensive table sets out the basic differences from NA 73 Mustang I to the sole NA 124 or P-51M.

Military

The English Civil War Armies, by Peter Young. Colour plates by Michael Roffe. Osprey Men-at-Arms Series, Osprey Publishing Ltd, PO Box 25, 707 Oxford Road, Reading, Berks. Price £1.25.

THIS BOOK IS a welcome addition to the growing literature on the military side of the English Civil War, and certainly maintains the standard of this established series. Brigadier Young's text is as informative, scholarly and entertaining as one would expect, and the book makes very apt and effective use of quotations from contemporary sources, which really give the reader the flavour of the period. All aspects of the armies are thoroughly covered, from dress and discipline to weapons and tactics, though artillery perhaps gets slightly short measure. In a book of only 40 pages one can't have everything, and there can only be limited coverage of events and personalities, the former being wisely limited to a brief chronology. The great feature of the book is the collection of coloured plates — fifteen figures and a page of flags — splendidly-drawn, ingeniously reconstructed, and with supplementary notes; they alone would justify the price of £1.25, but they are in fact supplemented by nearly forty black and white illustrations, mainly contemporary material and much of it new to this reviewer. A very good buy.

The English Civil War 1642-1651, by R. Potter and G. A. Embleton. Focus on History Series, Almark Publications, 49 Malden Way, New Malden, Surrey. Price £2.35 (hardback), £1.60 (paperback).

A MUCH LONGER book — 96 pages — this has a somewhat different emphasis. With this series Almark seem to be moving from the purely military field more toward that of general history. The coverage is broader, not only armies and tactics (though these are well covered) but politics, social life, the navy,

Continued on page 56

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The content comprises of 40 pages of text, of which a fold-out is devoted to a full-colour illustration of the Concorde plus 2 pages of colour depicting the development aircraft. Additionally a large selection of photographs and technical diagrams appear. Price 50p.

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Continued from page 54

furniture, costume and so forth are dealt with in a series of brief but accurate and informative chapters, with some quite good 'potted biographies' of leading personalities, most of them military (though the rather random chronology of personalities and events included as Appendix I seems to have little point). The writing is most competent though it hasn't the flair of Brigadier Young's, being in a slightly impersonal 'textbook' style. While the book is very well illustrated, with a host of black and white pictures — again often contemporary — the number and standard of the colour plates, though good, is not quite up to that of the Osprey book (it does, however, contain two full pages of flags in colour). Again, very good value at £1.60.

This book would certainly be the first choice for the general reader approaching the period for the first time, or for the school library (for which it would be very well suited — ideal for project work), while the military modeller or wargamer who wished to buy only one of the two would probably go for *The English Civil War Armies*.

However, though there is some overlap between these two books, there is much which is not duplicated, and many of the 'incidentals' in *The English Civil War* are of great interest to modellers and wargamers — architecture for example; anyone really interested in the period would be well advised to possess both.

German Military Combat Dress 1939-1945, by Chris Ellis. Almark Publishing Co Ltd, 49 Malden Way, New Malden, Surrey. Price £1.50.

THIS BOOK HAS been around for some years but has now been revised and many of the illustrations are new. It is probably the best primer available on its subject, but it must be emphasised that it is only a primer and makes no pretensions to be anything more. All aspects of military dress used by the German forces are covered but not in any great depth — just enough for the average modeller or historian to appreciate the scope of any particular aspect of the many and varied combat uniforms. Also covered are the more widely used infantry weapons, and a very brief section on decorations.

Surprisingly, the Navy or Marine land units are not mentioned.

The illustrations are many and varied, some very familiar but others are new, including some colour photographs taken from the *Signal* magazine. A word of caution is necessary here, for anyone attempting to use the colour plates as colour references would be led widely astray. Copying and printing methods have warped the colour reproduction to such an extent that they retain little other than visual interest. Even so, this must not detract from the overall value of the book which will retain its value to modellers, wargamers and anyone else with an interest in the last war.

Change of address

Will all readers please note that from September 1 the new address of *Airfix Magazine's* editorial offices will be: Bar Hill, Cambridge CB3 8EL. Tel: Crafts Hill 80010. The advertisement and circulation departments remain at their old addresses — see Contents page.

American Military Camouflage and Markings 1939-1945, by Terence Wise. Almark Publishing Co Ltd, 49 Malden Way, New Malden, Surrey. Price £1.60.

THIS IS THE first generally and widely available book on the complex subject of American military vehicle markings and is a most welcome and useful work to have on the bookshelf. All aspects of vehicle markings such as tactical, national and identification signs are well covered and the author is to be congratulated on the way so much information has been compressed into so few pages.

Camouflage, which the US forces did not use so widely as other combatants, rates a chapter to itself along with some drawings and colour plates. The colour is well done but the same cannot be said of some of the photographs used to illustrate the various chapters. Some are so poor in quality or have suffered in reproduction to such an extent that they are almost valueless for their intended purpose. However, there are still many good pictures to interest and educate anyone who wishes to know more on this surprisingly neglected subject. With the exception of the previously mentioned photographs, this book is good value for money.

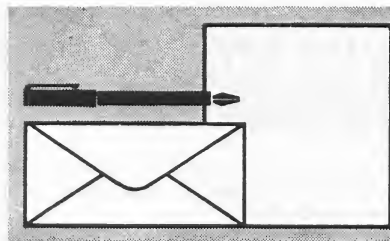
Warfleets of Antiquity, by R. B. Nelson. Illustrated by P. W. Norris. Wargames Research Group, 75 Ardingly Drive, Goring-by-Sea, Sussex. Price £1.80.

THIS IS A book which wargamers in particular, but people interested in the ancient world in general, will find invaluable. It contains an enormous amount of factual information, splendidly clear illustrations and maps. The book falls into two sections. The first deals individually with the ships themselves, explaining the intricacies of rowing systems with great clarity.

One or two points emerge here, worth commenting on. In his bibliography, Mr Nelson criticises W. L. Rodgers (*Greek & Roman Naval Warfare*) for unduly modernising his ship reconstructions. But perhaps he himself goes the other way, as some of his ships take the reliefs and drawings they are based on very literally, making no allowances for the stylisation of the original.

Another point concerns the Saxon longship, which can only be based on this Sutton Hoo, or more likely, the Nydam vessel. Neither of these had masts, nor any provision for them, but Mr Nelson gives his boat a mast and sail. But these are small criticisms of an otherwise excellent account of ancient shipping.

The second half of the book, after explaining very clearly the various basic tactics used by the fleets, gives accounts and battle plans of the most significant battles at sea in classical times. This section gives all the information wargamers will need to reconstruct the battles for themselves, while the maps and plans are excellent. If you enjoyed the recent series on ancient warships in *Airfix Magazine*, and if you're at all interested in ancient warfare, don't miss this book.



letters to the editor

Battles at Bloomsbury

BRITAIN'S LARGEST-EVER military modelling and wargaming exhibition opens on August 25 at the Bloomsbury Centre Hotel, Coram Street, London WC1.

Organised by Centre Hotels with the advice and guidance of well-known wargamer Jim Poulton, the meeting will run for three days over the Summer Bank Holiday, August 25-27. Opening times are 10am to 6pm Saturday and 10am to 8pm on Sunday and Monday.

The exhibition will include military figure and vehicle displays, demonstration wargames put on by the Warlords, dozens of trade stands and a National Model Painting Competition which is open to anybody visiting the show. Prizes in the competition include holidays in Centre Hotels both in Britain and abroad.

Anyone with an interest in wargaming or military modelling is urged to visit this meeting, which promises to be the best show of its kind ever produced. Admission is 35p, including programme.

(The Bloomsbury Centre Hotel is close to Russell Square Tube station (Piccadilly Line) and Euston (Circle, Metropolitan, Northern and Victoria Lines).)

Squadron codes

I WOULD LIKE to congratulate Messrs Michael Bowyer and John Rawlings on their excellent new series. From my notes, I find the following omissions.

- A This was used by RAFC Cranwell on their Balliol T2s in the early 1950s, eg WF991:A-C, WG124:A-P.
- B 14 Sqn, used on their Venoms in Germany, eg WE356:B-X, WE357:B-F.
- B* 204 Sqn. Shackleton MR1A, eg WG529:B-F.

A similar article by R. C. Sturtivant appeared in *Air Pictorial* 1955-58 and from this I list the following.

- AI 'A' Flight, 1 AACU Henley III.
 - AJ* North Luffenham Station Flight.
 - AN* Great Dunmow Station Flight.
 - AW* 664 Sqn. Auster IV/V.
 - A6 1833 Sqn. Corsair II.
 - A7 800 Sqn. 803 Sqn.
 - BI 'B' Flight, 1 AACU. Henley III; Holme-on-Spalding Moor Station Flight.
 - B3* Wyton Station Flight.
 - B6* Spilsby Station Flight.
 - B7* Waddington Station Flight.
 - B8* Woodhall Spa Station Flight.
 - BL3 765 Sqn.
- A. A. Foster, Grimsby, Lincs.

Can any reader confirm those I've starred? Naval codings and those on post-war trainers lay beyond the system being covered. Very few of the Station Flight codes ever seem to have been used although many were certainly allocated. Were any of those mentioned in this letter used? 'B' for 14 Sqn is a confirmed addition, but it is believed that 204 Sqn's Shackletons were 'coded' T. Various AOP Sqn codings have come to light but rarely are they confirmed loggings. No 1 AACU marked its 'A' Flight aircraft A-1, A-2 etc, and 'B' Flight B-1, B-2 etc. Again this is outside the system being listed. We hope eventually to cover training and miscellaneous units in full, although it is a mighty task! — Michael J. F. Bowyer.

All plastic or not?

THE IPMS AS a self-governing body is quite entitled to lay down rules concerning its own competitions, although I think that they should consider to what extent the rules are enforceable and what result strict enforcement would have. My point is, however, to try and find out what is the advantage of using just one material, surely to lay down a plastic-only restriction is to limit skills and not increase them?

Contributions

Letters to the editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit, and the publication of photographs from readers is similarly rewarded. Airfix Products Ltd award the kits on the following scale:

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Please note that while every effort is made to answer simple queries, *Airfix Magazine* is not a reference library, and complicated research cannot be undertaken for readers.

Opinions expressed by correspondents on this page are their own and do not necessarily reflect the views of the Editor of *Airfix Products Ltd*.

On some jobs it is far easier to use aluminium sheet or on others to use balsa wood, and I can see no valid reason for discouraging this. Modelling ought to be a pleasure and not a penance. To be dogmatic on a point such as this has the effect of deterring newcomers to the hobby. John P. Wilkes, Manchester.

Help!

A NUMBER OF requests have come in over the last couple of months from people compiling books etc anxious to get in touch with past Photopage contributors. If the following list includes you, or if you know the person concerned, could you please get in touch with me at *Airfix Magazine*? — Ed.

Mr R. C. Stokes (11 Sqn Venoms, October 1968).

Mr D. G. Brereton (45 Sqn Venoms, September 1969).

Mr W. L. Clay (Sturgeon RK787, May 1967).

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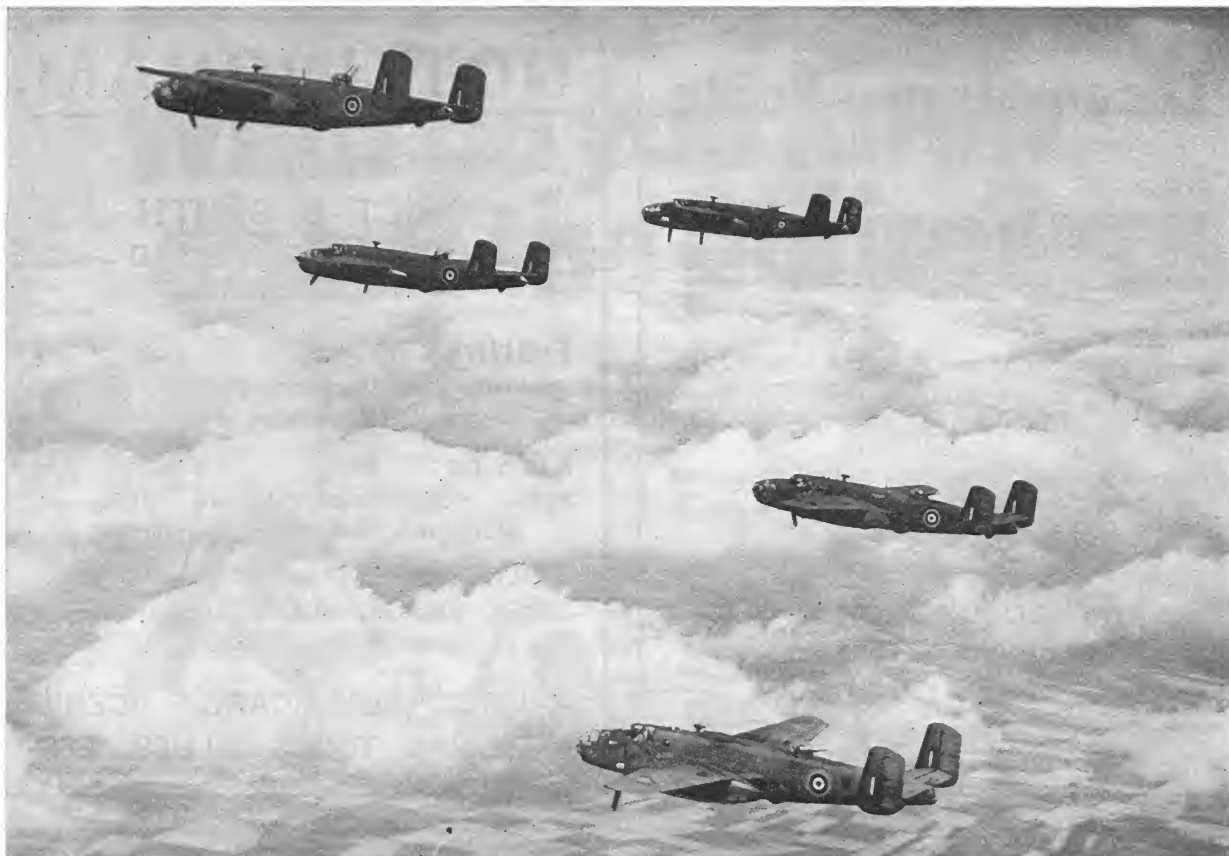
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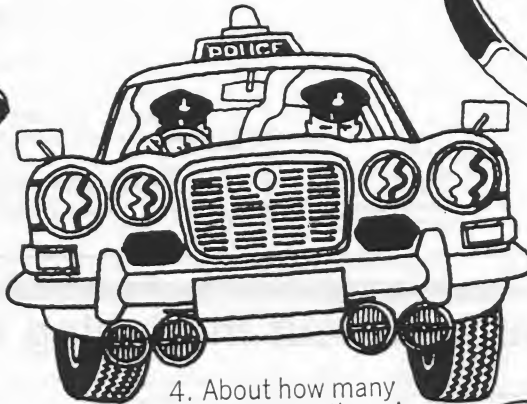


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1. No. There are a number of others, such as Rottweiler, Doberman, Boxer, Airedale, and Labrador Retriever. 2. In 1901. 3. No. Some forces also use plastic handcuffs. These have no locks and have to be sawn off. 4. Approximately 15,000. 5. 1937.

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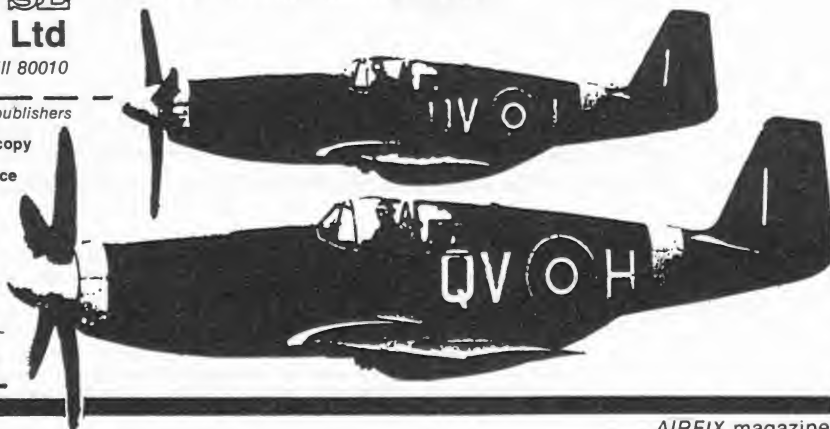
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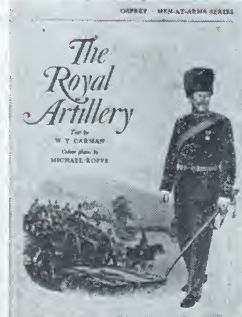


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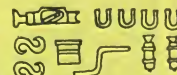
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